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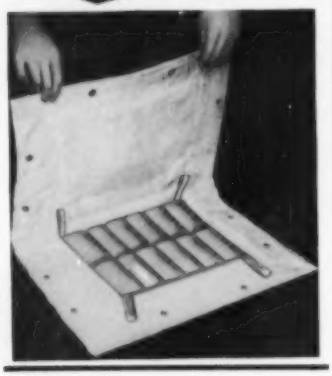

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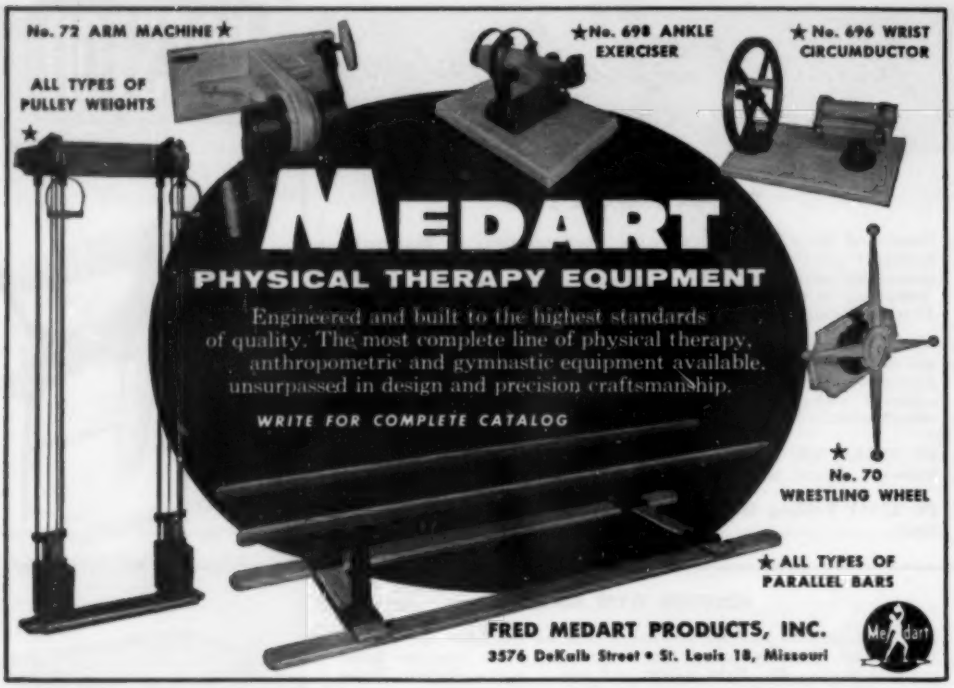
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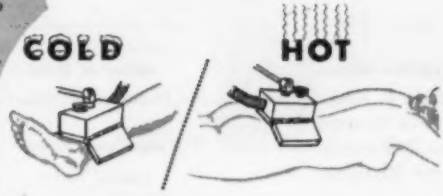

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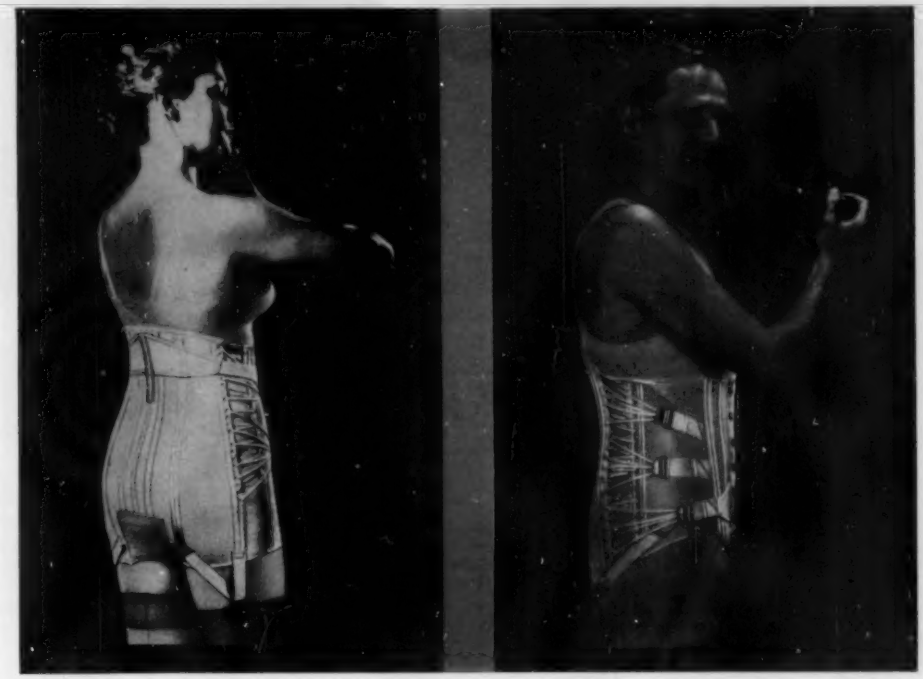

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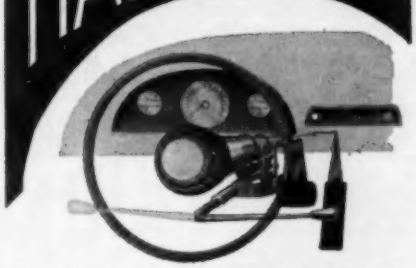

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Human Relations in Administration. Jack R. Gibb, J. Am. Diet. Ass., 35: 333-337, April 1959

The Case Approach in Educating the Intern. Margaret E. Radke, J. Am. Diet. Ass., 35: 338-347, April 1959

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Upper Extremity Prosthetic Training for the Young Amputee. Geraldine Richardson and Aida Lund, Am. J. Occup. Ther., 13: 57-63, March-April 1959

ARTHRITIS

Relief of Arthritic Pain and Rehabilitation of Chronic Arthritic Patient by Extended Sympathetic Denervation. Robert Herfort and S. H. Nickerson, Arch. Phys. M., 40: 133-140, April 1959

CEREBRAL PALSY

Prevention of Acquired Dislocation of the Hip in Cerebral Palsy. Winthrop M. Phelps, J. Bone Surg., Am. Vol., 41-A: 440-448, April 1959

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Habituation to Heating and Cooling of the Same Hand. E. M. Glaser, M. S. Hall and G. C. Wittow, J. Physiol., Lond., 146: 152-164, April 1959

On Physical Heat Regulation and the Sense of Temperature in Man. T. H. Benzinger, Proc. National Acad. Sciences, 45: 645-659, April 1959

Some Basic Deficiencies of the Plethysmograph Method and Possibilities of Avoiding Them. S. Figar, Angiology, 10: 120-123, April 1959

Vasomotor Regulation of Cutaneous Circulation. Alrick B. Hertzman, Physiol. Rev., 39: 280-306, April 1959

Vasomotor Responses to Cooling in the Extremities of Subjects with Neurologic Lesions. K. de Krinis, W. Redisch, A. Antonio, A. Bogdanovitz and J. M. Steele, Circulation, 19: 583-589, April 1959

Vasomotor Responses to Exercise in the Extremities of Subjects with Vascular Disease. W. Redisch, K. de Krinis, A. Antonio, A. Bogdanovitz and J. M. Steele, Circulataion, 19: 579-582, April 1959

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Functional Fashions for the Physically Handicapped. H. A. Rusk and E. J. Taylor, J. Am. M. Ass., 169: 1598-1600, Apr. 4, 1959

Self-help Devices: Grasp and Holding. Edward W. Lowman and Howard A. Rusk, Postgrad. M., 25: 443-445, April 1959

GERIATRICS

An Activity Program for Old People in a Sheltered Living Community. Richard N. Filer, Geriatrics, 14: 229-236, April 1959

The Basic Six Needs of the Aging. Catherine L. Austin, Nurs. Outlook, 7: 138-141, March 1959

NEUROLOGY

Aetiological Aspects of Multiple Sclerosis, Part I. Henry Miller and Kurt Schapira, Brit. M. J., 5124: 737-740, March 21, 1959

Aetiological Aspects of Multiple Sclerosis, Part II. Henry Miller and Kurt Shapira, Brit. M. J., 5125: 811-815, March 28, 1959

Chronic Neurological Sequelae of Acute Trauma to the Spine and Spinal Cord. Part II. The Syndrome of Chronic Anterior Spinal Cord Injury or Compression. Herniated Intervertebral Discs. Richard C. Schneider, J. Bone Surg., 41-A: 449-456, April 1959

Part IV. Problems Pertaining to the Treatment of Retained Foreign Bodies. Richard C. Schneider and Edgar A. Kahn, J. Bone Surg., 41-A: 457-462, April 1959

Facial Paralysis: A Method of Treatment with Massive Doses of Histamine. Silvio H. De Blasio, Laryngoscope, 49: 260-267, March 1959

Fundamentals, Fads and Fallacies in the Carpal Tunnel Syndrome. E. B. Schlesinger, Am. J. Surg., 97: 466-470, April 1959

Herniated Lumbar Vertebral Disc. Cutaneous Hyperalgesia as an Early Sign. Roger M. Morrell, Mil. M., 124: 257-269, April 1959

Neurology (concluded). W. K. Jordan and H. H. Merritt, N. England J. M., 260: 702-709, Apr. 2, 1959

Pathogenesis of Post-traumatic Sympathetic Dystrophy. W. R. Drucker, Am. J. Surg., 97: 454-463, April 1959

NEUROPHYSIOLOGY

Readjustment of Innervation Relationships in the Central Nervous System Resulting from Transplantation of Antagonist Muscles. N. M. Shamarina, Sechenov Physiological J. of the U. S. S. R., 44: 991-1000, 1958

Recurrent Facilitation of Spinal Reflexes. Victor J. Wilson, J. Gen. Physiol., 42: 703-713, March 20, 1959

The Influence of Afferent and Descending Pathways on the Rhythmical and Arrhythmical Components of Muscular Activity in Man and the Anaesthetized Cat. O. C. J. Lippold, J. W. T. Redfearn and J. Vuco, J. Physiol., Lond., 146: 1-9 April 1959

The Innervation of Muscle: A Symposium (Part II). H. A. Meyling, E. Christensen, R. Magun and E. Esslen, Am. J. Phys. M., 38: 53-86, April 1959

ORTHOPEDICS

A Study of Contractures in Muscular Dystrophy. Kenneth C. Archibald and Paul J. Vignos, Arch. Phys. M., 40: 150-157, April 1959

Aid and Diagnosis of Hip and Knee Pain. Lewis Cozen, Orthopedics, 1: 130-131, April 1959

Biomechanical Studies on the Lumbar Spine and Pelvis. F. Gaynor Evans and H. R. Lissner, J. Bone Surg., 41-A: 278-290, March 1959

Observations on the Ambulant Correction of Thoracic Scoliosis and Kyphosis with Particular Reference to the Experimental Use of Hydrostatic Pressure. R. A. Bremner, J. Bone Surg., Brit. Vol., 41-B: 96-104, February 1959

PARAPLEGIA

Management of the Bladder in Traumatic Paraplegia. Pablo A. Morales and Robert S. Hotchkiss, Arch. Phys. M., 40: 141-149, April 1959

PHYSICAL THERAPY

The Importance of Suelex *in Post-Cast-Removal.* Donald Eliot King, Orthopedics, 1: 124-125, April 1959

The Physical Treatment of Peripheral Nerve Injuries.

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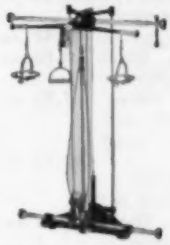

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The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Evaluation and Selection of Wheel Chairs

Beth H. Fowles, B.S.

Introduction

The Physical Therapy Department at Highland View Hospital, Cleveland, Ohio, has 108 wheel chairs of various designs and combinations available for patient use during the trial period when a wheel chair evaluation is ordered by the physiatrist. The actual "use it—live with it" method cuts down greatly on errors in the final specifications, thereby saving a considerable amount of expense and needless anxiety to the patient.

As a result of three and one-half years of experience in evaluating the needs for special and/or specific wheel chairs for 253 patients, the senior staff of the Physical Therapy Department has felt the need for a basic outline for this procedure, and the following criteria and suggestions for evaluation are now being used.

I. Objectives of wheel chair evaluation

- A. Maximum safety for each patient
- B. Good alinement and optimum comfort
- C. Maximum independence in A.D.L. (activities of daily living)

II. Selection of wheel chair

A. General considerations

1. Brakes

For safety reasons, it is recommended that *all* wheel chairs have brakes. The brakes must be locked when the patient is performing any wheel chair transfer activity.

2. Casters

Eight inch casters are generally recommended.

a) They allow greater maneuverability and stability than the 5 inch casters.

b) Transfers are easier if the wheel chair has the casters in front and the large wheels at the rear.

3. Folding wheel chairs with the following specifications are recommended.

a) Light weight and durable for lower maintenance cost,

b) Excellent adaptability, providing a variety of combinations,

c) Good trade in value,

d) Interchangeable parts,

e) Manufactured by a long standing, dependable firm with high record of special service to patients.

4. Basic types

a) The "*universal*" model has the large wheels in rear. It is the best chair for all around use because

(1) Transfer is easier,

(2) The patient is encouraged to maintain good position,

(3) It is more easily wheeled or rolled over curbs, steps, rugs, and rough surfaces.

b) The "*traveler's*" model has the large wheels in front. It is strictly an indoor chair and is seldom

Chief, Department of Physical Therapy, Highland View Hospital, Cleveland, Ohio.

recommended because the placement of the large wheels obstructs transfers. One advantage is that it requires one less foot of space for turning.

B. Individual considerations

1. Patient's disability
   a) Specific disability (e.g., hemiplegia, quadriplegia, amputation),
   b) Any limitation of ROM (range of motion) and patient's ability to function within this limitation,
   c) Muscle weakness, and the prognosis of the patient.

2. Patient's measurements
   a) Weight

   A heavy duty chair should be ordered for a patient whose weight exceeds 175 lbs. It is available in 18 inch to 22 inch seat widths. The points of greatest strain should have heavy duty parts and/or reinforcement.

   b) Size
      (1) Chairs can be purchased in the following standard sizes
         (a) Adult: 16 by 18 inches seat dimension
         (b) Junior: 16 by 16 inches seat dimension
         (c) Growing child: adjustable.
         (d) Tiny tot: 12 by 11 inches seat dimension
      (2) A patient who is 6 feet tall or over may need an oversized chair. Attention should be paid to the length of the patient's legs and trunk, which may necessitate a special depth seat, raised seat, or higher back.
      (3) If possible, an oversized chair should be avoided because
         (a) It is hard to maneuver through doors, under counters, etc.
         (b) It may have an undesirable psychological effect on the patient.
         (c) Transfer technics are more difficult if seat levels differ too greatly.

3. Transfer technics
   a) If the patient uses a diagonal approach, has good power in his upper extremities, and the use of one or both legs, a standard chair is recommended.
   b) If the patient uses a head-on approach, swinging, detachable footrests are needed. (Most paraplegics prefer this modification even with a parallel approach.)

4. Home requirements

   If the patient will not be able to maneuver in his home, it may be necessary to sacrifice some wheel chair modifications.
   a) The inside widths of all door frames should be measured.
   b) It should also be determined that the patient will have sufficient room to wheel and turn his wheel chair in the rooms in which he will be living.
   c) The home situation, the wheel chair and its modifications, should be discussed with the patient and and his family. The patient's preferences should be honored.

III. WHEEL CHAIR EVALUATION PROCEDURE

A. Trial period

Therapists are requested to secure the wheel chair most suitable for the patient's disability from the Physical Therapy Department supply for a trial period before specific recommendations are made. The trial period may vary from one hour to one month. Equipment for wheel chair modifications are also available from Physical Therapy Department supply, such as handrims with vertical or horizontal projections, overhead slings, solid back insert, etc.

B. Measurement

In making a wheel chair evaluation for a severely involved patient whose requirements are not met by standard chairs, the therapist should record all measurements on a wheel chair measurement blank. The wheel chair manufacturer should be advised if a special chair, not in accord with standard measurements, is needed. This chair will then be individually constructed to comply with the patient's measurements.

1. Measurements should always be taken while the patient is seated.
2. If the patient is to wear braces, the measurements should be taken with the braces on. If this is not possible, 1½ inches should be added to the seat width to make allowances for the braces.
3. The therapists are requested to keep a copy of the measurement blank to check all specifications when the chair arrives.

C. Ordering

All wheel chairs not requiring special construction should be ordered on wheel chair prescription blanks. The basic price may be obtained from the price list. To this is added the cost of accessories. All wheel chair evaluations should be discussed with the assigned senior staff supervisor before a final checking with the chief physical therapist.

D. Distributor

Local distributors of wheel chairs may be found in the classified section of the telephone book.

1. If the length of time the patient will need the wheel chair is questionable, a wheel chair may be rented for approximately $10.00 a month. An additional charge is made for modifications. If the patient decides later to purchase a chair, the *first* month's rental charges may be applied against the price of a new chair.
2. If the patient cannot afford a new chair or if the life expectancy of the patient is uncertain, the therapist should contact the wheel chair distributors to see if a suitable "used" chair is available and get information on its cost.
3. It is often possible to trade in an old wheel chair for one which is newer or one with the modifications necessary for the patient's disability. Therapists must ascertain the "trade in" price from the distributor and include this with purchase order.

IV. SPECIFIC DISABILITIES

A. *Quadriplegia*

1. For a quadriplegic patient, a full reclining chair with detachable upholstered armrests, pin locks, and padded, elevating detachable legrests is indicated. Some patients are able to perform a body roll from the chair to the bed, using shoulder, neck, and possibly some upper trunk muscles. In this instance, the wheel chair should have 20 inch rear wheels to allow clear passage. However, 20 inch wheels are difficult to reach so propulsion may be more difficult or impossible. In this case the patient and family should decide which to sacrifice for the patient's greatest independence.
2. If the patient has shoulder muscle power and is unable to grip the handrims to wheel the chair, horizontal or vertical projections may be attached to the handrims. If this is unsuccessful, the patient may have to use cock-up splints as well. A trial period of two to four weeks may be necessary to determine whether these are practical and advisable.
3. A 3 to 6 inch foam rubber cushion is indicated to relieve pressure over the ischial tuberosities. (See section #6 under Modifications).
4. Overhead slings and/or a utility tray are also frequently indicated.
5. The patient's family and/or attendant should be instructed in the maintenance and proper method of adjusting the wheel chair and using its various modifications.
6. Anti-tipping levers may be ordered on the end of horizontal body frame bars at back of wheel chair to prevent the chair from tipping when it is adjusted to a full reclining position.

B. *Paraplegia*

1. Usually a chair with detachable arms is indicated for the paraplegic patient. Desk arms should be considered on the basis of the patient's preference and his home and job situations. The armrests should be upholstered.
2. If no upper extremity involvement exists, pinch locks are recommended, because they withstand the wear and tear of daily active use better than the pin locks.
3. Swinging, detachable footrests should

be considered to facilitate transfer technics at the wheel chair and ambulatory level. When swung out of the way, they allow closer approach to furniture.

4. If the patient is ambulatory, a crutch holder should be ordered.
5. If a chair is to be used frequently outdoors on grass and rough terrain, pneumatic tires are recommended.
6. Heel loops are generally indicated for these patients.
7. For a paraplegic returning to a daily job an additional wheel chair is recommended to remain at place of employment. This will save money eventually because transfer of the chair shortens its life.

C. *Amputations*

1. The amputee chair with the axle set 2½ inches farther back than the standard chair compensates for the loss of the weight of the lower extremities of the bilateral amputee. The danger of the chair tipping over is thus eliminated.
2. An amputee chair does not have footrests or legrests; however,
   a) If the patient is a candidate for prostheses, swinging detachable footrests should be ordered to support the prostheses.
   b) If the patient is a unilateral amputee and there is a possibility that the remaining leg will have to be amputated, one swinging, detachable elevating legrest is indicated.
3. Detachable arms are generally contraindicated, because trunk balance is always impaired and there is increased danger of falling during transfer.
4. Trial periods of transfer technics in the physical therapy clinic should be arranged if there is a question whether to order desk arms. Because of the drop in height, at the job, generally desk arms will *not* provide adequate leverage for transfer.

D. *Hemiplegia*

1. One-arm drive wheel chairs.
   These chairs are expensive and are not generally recommended. Their over-all width is greater than other standard wheel chairs. Propulsion of these chairs is frequently impossible even for the mildly confused hemiplegic patient. To prevent possible bending of the axle it must be removed before the chair is folded, unless the chair has a folding axle which is now available.
2. Standard wheel chairs
   If the patient can possibly manage with a standard chair, we suggest purchasing one. Many hemiplegic patients prefer a standard wheel chair and compensate for the involved hand by using the uninvolved foot to push and guide the chair.

E. *Polio and other neuromuscular disabilities*

For these patients we suggest deferring the wheel chair evaluation until the physician is reasonably sure of the degree of return of muscle power.

V. MODIFICATIONS

(Consult the wheel chair catalog for an inclusive list and description)

A. Arms

1. Height—the standard height is 9 inches.
2. Detachable types
   a) *Regular* — this *detachable* type arm is the one which is generally recommended.
   b) *Detachable desk arms* — are designed to fit under low desks and tables. If extra leverage is needed for standing or for transfer technics, the arms may be reversed so that the jog is in the back. Because of the inconvenience of switching the arms, many patients prefer the regular arms. Special height of arms may be requested without extra cost on all chairs with removable arms.
3. Accessories
   a) Upholstered armrests are recommended for any type arm, for the patient's comfort. This adds 1¼ inches to arm height.
   b) Pin or button locks should be provided for detachable arms for added stability.
   c) The armrests on reclining back

chairs may be ordered with posterior extensions, so that the patient's arms remain supported as the chair back is reclined.

B. Footrests and legrests—special types

1. *Detachable legrests and footrests*—allow a close approach for head on transfer.
   They can be taken off or swung to the side for parallel transfer or for transfer to and from crutches.
2. *Elevating legrests* are recommended for patients with arterial insufficiency of the lower extremities and for patients with one or both knees fused. These are generally used in combination with reclining-back chairs.
3. *Detachable, elevating legrests* have the advantages of both 1 and 2. They can be taken off so that they are not in the way of the person lifting the patient (e.g. a quadriplegic). They are generally in combination with reclining-back chairs.
   a) Padded posterior panels to relieve the pressure on the calf muscles.
   b) The padded posterior panels may also be recessed to relieve the pressure on the calf muscles.

C. Brake extensions

Brake extensions may be indicated for better reach or leverage where there is severe range of motion limitation and muscle weakness in the shoulder, as in hemiplegia, arthritis, polio, and multiple sclerosis.

D. Caster locks

Caster locks keep the casters from turning when the patient is getting into or out of the wheel chair. They are particularly needed for heavy patients, and patients with severe trunk imbalance or spasm and/or severe knee flexion contractures.

E. Handrim projections

Horizontal, vertical, or diagonal projections may be attached to the handrims. The number, the length, and the desired spacing of the projections may be specified. The projections are indicated for patients who have shoulder muscle power, but no power in the hands. The patient may use cock-up splints to assist in wheeling the chair. This should be taken into consideration when ordering.

F. Cushions

A 3 to 6 inch foam rubber cushion covered with washable plastic is indicated for the patient's comfort and to relieve pressure areas.

1. Cushions with a standard measurement of 16 by 16 inches or 16 by 18 inches with a thickness of 1 to 3 inches are ordered from central supply at Highland View Hospital.
2. Cushions with adaptations such as "cutouts" for the ischial tuberosities or the sacral area are made in our adapted equipment shop.

G. Back support

For additional back support a solid back or orthopedic backrest is indicated. Flexible back supports made to the patient's specific measurements are made in our adapted equipment shop.

H. Slings and utility tray

Attachment of overhead slings and/or a utility tray are also frequently indicated. They are generally recommended by the patient's occupational therapist. All wheel chair recommendations should be discussed with the assigned occupational therapist so as to be certain that all the patient's needs regarding his wheel chair have been considered.

With the realization that our experience has been limited, we have submitted this outline with the hope that other therapists will add new and improved methods and will consider critically the material which has been presented.

Members of the senior staff who have contributed generously of their time and knowledge in the preparation of this wheel chair evaluation are Helen Stewart, Ray Nordquist, Ruth Mitchell, Nadja Konsen, and Ruth Tono.

An Improvised Method for Sling Suspension Exercise

Bernice E. Lyford, B.A., and Charles D. Bonner, M.D.

Sling suspension as such is not a new method of physical therapy, but its acceptance as a commonly employed therapeutic tool has been limited in this country. Detailed coverage of the general principles of this method can be found,[1, 2] but only one article has been noted in the medical literature in the past 20 years.[3] The concept was introduced into our rehabilitation unit 18 months ago* and has proven to be of great value, especially in the rehabilitation of geriatric patients, since this method permits additional safety and comfort by requiring certain initial exercises to be done in the supine or side-lying position.

There are a number of ways to set up sling suspension technics ranging from single suspension points to the highly complex Guthrie-Smith apparatus. The apparatus described here is readily available, easily constructed, relatively inexpensive, and adaptable for home or hospital usage. It permits a selection of a variety of suspension points only duplicated by wire mesh screening.

Construction

The most important feature of this apparatus is a lightweight bed or cot spring of the wire link type which provides multiple suspension points. This is supported on a Balkan frame which is in turn attached to a hospital bed. The bed should be of low height to allow for a clearance of at least 5 feet between the mattress and overhead support. The spring may be secured in place by sash cord, friction tape, or nuts and bolts. (Fig. 1)

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* We acknowledge with appreciation the information and assistance given by Jennifer Trew, of London, England, when serving as a physical therapist in our rehabilitation unit.

The apparatus may also be erected over a mat platform in place of a hospital bed provided extra stability of the supports can be achieved by additional bracing.

The necessary accessory equipment to initiate the active use of the apparatus is as follows:

I. Slings

A. Basic material needed

1. Canvas or ticking
2. Cotton flannel
3. Bias tape
4. Key rings or any plain metal rings such as are obtainable from hardware stores, 1 inch or 1½ inches in diameter.

B. Instructions for assembling

Most slings are made by sewing two layers of canvas together with two or more layers of flannel inserted in between. This provides softness and bulk. The ends are rounded and edges bound with bias tape. A metal ring is attached to each end by a loop of strong tape or several thicknesses of canvas, and the base of the loop is securely stitched to the sling.

Four sets of slings of this type conforming to the following dimensions should be sufficient at the start—two wide rectangular slings for thighs or trunk measuring 20 inches by 6 inches and two narrow rectangular slings for arms or ankles measuring 11 inches by 4½ inches.

A special sling is used for the head. Again two layers of canvas or ticking are sewn together omitting the flannel insert in order to reduce bulk. A pointed ellipse measuring 14 inches by 6 inches is cut out of this and then the ellipse is cut in half lengthwise. All edges are next bound with tape. The halves are stitched together only at the ends by overlapping the points. Metal rings are attached to the ends as described above. When the resulting sling is cupped, it separates down the middle and fits the head securely. (Fig. 2)

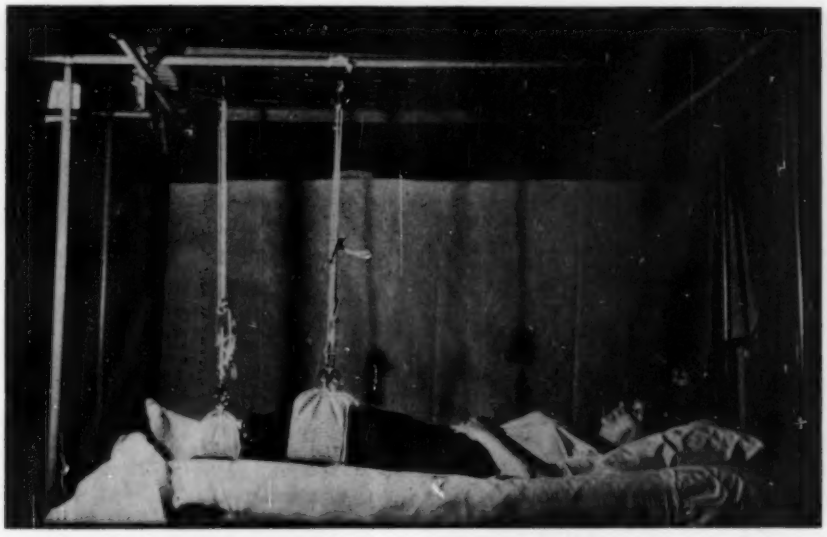

Figure 1. Discarded studio couch spring fastened to metal Balkan frame. The latter is attached to a regular single bed. Note the variety of suspension points available.

II. Connecting ropes

A. Basic material needed

1. 24 foot length of sash cord
2. 8-3 inch swivel harness hooks
3. 4 cleats, 3 inches by 1¼ inches by ¼ inch, plywood or Plexiglas

B. Instructions for assembling

A hole is drilled ½ inch from each end of the cleat. ("B," fig. 3 and "D," fig. 3) The diameter of the hole is just large enough to permit passage of the sash cord through it. The sash cord is cut into four 6 foot lengths and a harness hook is knotted at one end of each. ("A," fig. 3) The other end is next passed through one hole of the cleat ("B," fig. 3), through the eye of another harness hook ("C," fig. 3), and back through the second hole of the cleat. ("D," fig. 3) A knot is then tied in the free end of the rope to prevent its being pulled back through. ("E," fig. 3)

Spiral springs with various amounts of tension may be placed between the slings and connecting ropes if resistence in a vertical plane is desired. Should resistence in a horizontal plane be required, the springs may be connected directly to the sling on one end and to a fixed point on the side so that resistance is parallel to the line of motion. These springs are calibrated in pounds according to the amount of pull they ex-

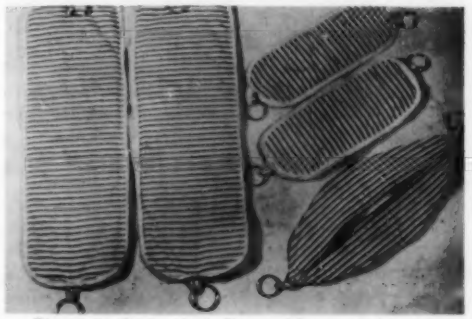

Figure 2. One set of slings with metal rings attached and ready for use. Head sling in lower right corner.

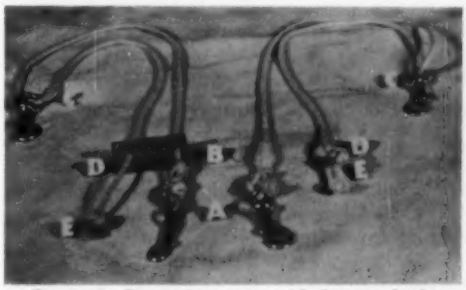

Figure 3. Connecting ropes with harness hooks and wooden (on the left) or Plexiglas (barely seen on the right) cleats to complete connection.

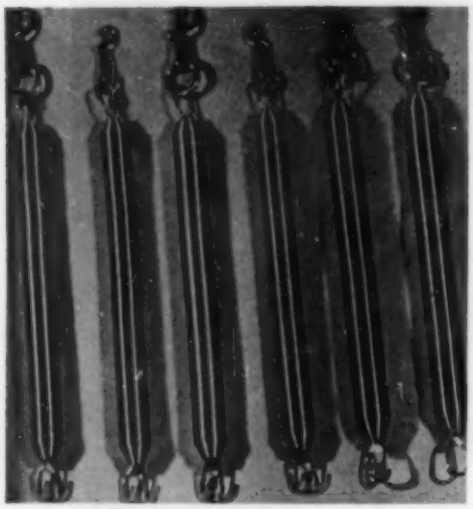

Figure 4. Two 20 lb., 25 lb., and 30 lb. spiral springs with harness hooks attached to one end. Two or more springs may be used in combination to furnish the desired resistance.

ert when extended to their full length. They are obtainable in strengths of from 5-50 pounds at prices of $1.60 to $3.20 each. It is advisable to buy two each of several different strengths. (See fig. 4 and 7)

APPLICATION

The apparatus has been particularly useful in the following four therapeutic situations. To illustrate the use of the apparatus its application to these problems will be described.

I.: Hip abduction

Patients with advanced rheumatoid arthritis frequently have severe involvement of their hips. Even though complete bony ankylosis may not have taken place muscle atrophy may markedly limit the motion of the joint. Limitation of abduction often makes impossible even the basic functions of sitting on a bed pan or putting on an undergarment. The patient shown in figure 5 improved to the extent of being able to use the bed pan and later progressed to use the toilet facilities. Commonly there is not enough muscle power to overcome the friction of the bed, mat, or plinth upon which the patient is lying and the patient cannot move his extremities without assistance.

The patient should lie supine with the contralateral hip stabilized in abduction. A wide sling is placed under the lower third of the thigh and a narrow sling under the ankle. Directly over each sling a connecting rope is fastened to the bed spring by one harness hook. The second hook is fastened to the two rings of the sling and the ropes are shortened by adjusting the cleats. The leg should be lifted just clear of the bed. The patient is then instructed to swing out.

When this "pendular" method of suspension is used the leg returns to the starting point at the end of each contraction. If necessary, mechanical advantage can also be applied to the abduction motion by placing the suspension point slightly lateral to the hip. This tends to help the weakened muscles to perform. Conversely, if the suspension point is placed medial to the hip at successively more distant points a progressive increasing amount of resistance may be brought into play. (Fig. 5A and 5B)

II. Hip extension

Hemiplegic patients, having gait problems due to weakness of hip extensor muscles, benefit by the use of this simple device. Suspension of the affected limb so as to bring into play the pendulum action assists early motion in the weakest of limbs. It can also be used for strengthening extension of the stumps of mid-thigh amputees.

The patient is placed in a side-lying position with the underneath leg flexed at the knee and hip so as to stabilize the pelvis. The upper leg is suspended by placing a sling under the ankle and another sling under the thigh. A rope connection is attached to a suspension point directly over the slings. Should one wish to assist the movement of hip extension, the suspension points may be moved several inches to the rear of the patient. Conversely, to provide a minimal amount of resistance, the suspension points may be moved forward.

To create greater and progressive resistance in a horizontal plane, a weight and pulley circuit may be improvised by hanging an adjustable Buck's extension apparatus on the back of a straight chair. The rope from the pulley should connect to the rings of the ankle sling, in such a way that the pull of the resistance is at right angles to the limb when it reaches a point midway in its arc of movement. The chair may be stabilized by sand bags placed on the seat. (See fig. 6)

III. Trunk extension

Severely involved rheumatoid arthritics with multiple ankyloses of joints suffer loss of power in their trunk muscles due to inactivity during

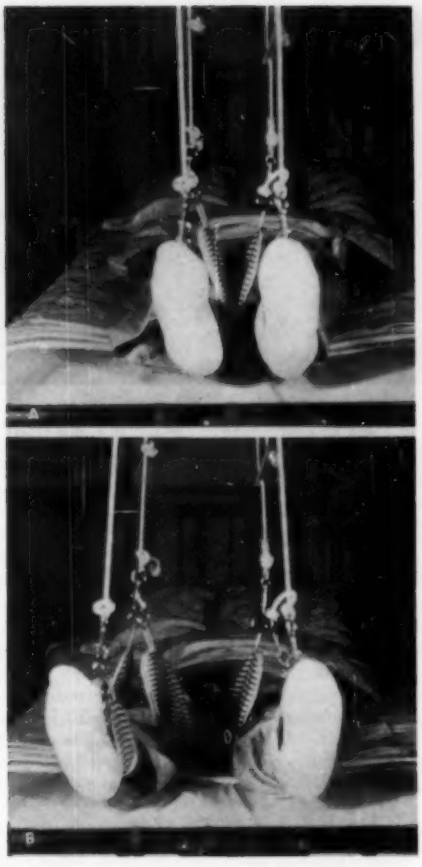

Figure 5. "A"—a severely crippled arthritic patient ready to perform hip abduction. "B" limit of patient's abduction swing.

bed rest or sitting in a chair. This is of major importance today when so many new joint reconstruction procedures are available. This apparatus is significantly valuable in restoring trunk power to these patients while their recently operated knees or hips are being mobilized for ambulation.

The patient is placed in a supine position. A sling is placed under the head and another sling under the back. Two springs, of equal strength, are attached to each sling, one at either end. Connecting ropes are joined to the springs and to the overhead support. The suspension points, rather than being directly over the slings, are several inches footward. The line of force is thus placed, as nearly as possible, parallel to the line

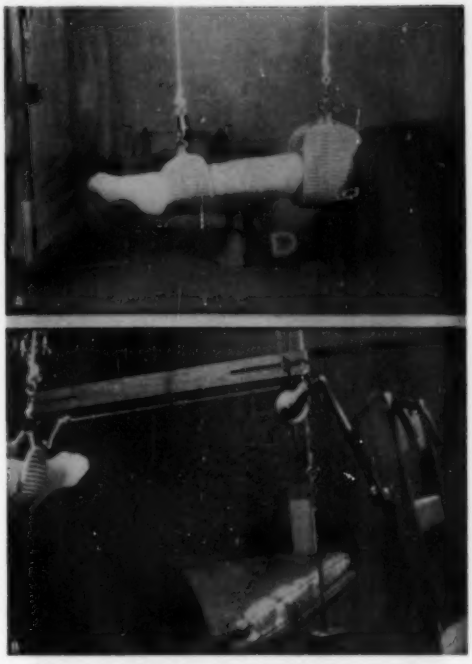

Figure 6. Positioning for hip extension exercises. Note the stabilization of the pelvis in "A" by flexion of the uninvolved leg. "B"—the detail of the Buck's extension apparatus on a straight back chair and the mechanism of its progressive resistance.

of movement. The position of the suspension points will vary according to the range through which the movement is to take place. The four ropes are then shortened so that the head and trunk are raised at an inclined angle with the head of the patient being 6 to 12 inches from the mat. The patient is then directed to push back towards the mat. (Fig. 7A and 7B)

IV. Stretching of hip contractures

This apparatus has been a valuable adjunct to the stretching of so called irreversible hip contractures which have been "softened" by hydrocortisone acetate or prednisolene tertiary butyl acetate. The technic of these injections and the specific lytic changes which take place are the subject of another report [4] but the action of these steroids on fibrosed tissue has been well documented in the relief of circumscribed stricture of the urethra.[5, 6]

Prolonged passive stretching of these flexion contractures is carried out with the patient prone.

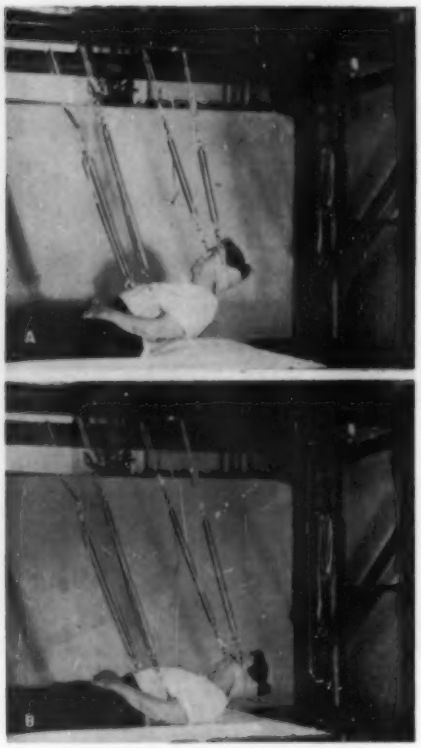

Figure 7. Trunk extension exercises for an arthritic patient following arthroplasties of both knees. "A"—start of the exercise. "B"—height of extension.

For stabilization a sandbag is placed under the pelvis on the side opposite the contracture and a broad strap is passed over the buttocks and under the mat or bed. This is pulled taut. A tendency exists for the pelvis to rotate upward on the side of the contracture, partly because of the angle of the contracture and partly because of the upward pull of the traction. Compensation for this is provided by placement of a sandbag under the anterior superior spine of the opposite nonaffected side. A sling is then placed

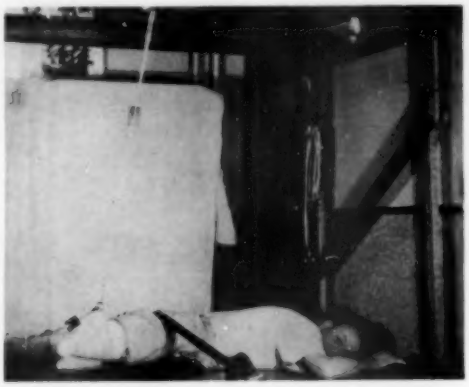

Figure 8. Manner of applying constant stretching to a flexion contracture of the hip in a mid-thigh amputee. Adduction is maintained by a connecting rope to a fixed point on the side such as a chair.

under the thigh and a connecting rope attached to both rings and the suspension point above. The rope is then shortened so as to pull the leg as strongly as possible into extension. This provides continuous, constant, irresistable traction while the patient lies comfortably prone in bed or on the mat. (See fig. 8) In this figure a sandbag has been placed under the affected hip in the foreground to demonstrate visually its level of placement. Actually this sandbag would be placed under the opposite nonaffected hip. Traction is supplemented by active resisted hip extension.

REFERENCES

1. Guthrie Smith, Olive F.: Rehabilitation, Re-education and Remedial Exercises, Baltimore, Williams & Wilkins Co., 1943.
2. Hollis, Margaret, and Roper, Margaret H. S.: Suspension Therapy in Rehabilitation, Baltimore, Williams & Wilkins Co., 1958.
3. Bier, Kathryn S.: Guthrie-Smith apparatus: Its construction and use in rehabilitation, Phys. Ther. Rev., 28: 227-238 (Sept.-Oct.), 1948.
4. Bonner, C. D.: Unpublished Data.
5. Bonner, C. D., Lyons, M. K. and Shields, D.: Local injections of hydrocortisone as a new and effective treatment for strictures of urethra and meatus, N. England J.M., 253: 130, 1955.
6. Lyons, M. K. and Bonner, C. D.: Local injections of hydrocortisone for the effective treatment of circumscribed strictures of the urethra. J. Urol. 77: 5, 1957

Paralysis of the Trapezius Muscle

Margaret L. Moore, M.S.

Isolated paralysis of all three sections of the trapezius muscle is infrequently present in clinical physical therapy in peacetime; it is more prevalent in the war wounded.[1] Since the function of the shoulder girdle is altered appreciably by such a paralysis, this case is being presented.

A 33 year old mother of two children was admitted to the North Carolina Memorial Hospital of the University of North Carolina four times between June 30, 1955, and Oct. 31, 1955, with a diagnosis of Hodgkin's disease. The first hospital admission, June 30, 1955, was for the purpose of workup and biopsy. The disease at that time was limited to the neck.

The patient was discharged July 1, 1955, but was readmitted four days later for a radical neck dissection on the right. Surgical notes indicate that the mandibular branch of the facial nerve, the lingual and hypoglossal nerves, and the eleventh cranial nerve to the trapezius were identified and preserved; although the proximal sections of the subclavian vein and the distal innominate vein, the phrenic nerve, and branches of C3 and C4 on the right were removed because of the infiltration of the disease process. The patient was discharged on July 20, 1955, following surgery.

The third admission was Sept. 13, 1955, for pain and weakness in the right shoulder following surgery in July. It was thought at this time that the disease process had not progressed sufficiently to account for the discomfort present. Pain of the type reported is not unusual following a radical dissection of the neck. The patient was referred to the Department of Physical Therapy on the day of her admission with a request for treatment of the shoulder and evaluation of its motor power. A physical therapy note of Sept. 14, 1955, states:

"Treatments started. There is paralysis of the upper, middle, and lower trapezius, right, with instability of the shoulder girdle. Moderate limitation of forward flexion and slight limitation of abduction are present. Will instruct in strengthening exercise for rhomboids and serratus in an effort to increase stability of the shoulder girdle."

The patient was photographed on Sept. 15, 1955,

Figure 1.

to demonstrate the effect of trapezius paralysis in the erect position and later that day was discharged with instructions for a home exercise program as requested by the referring physician. It was felt by the physical therapist and the physician that she had been overprotecting the shoulder since surgery.

The patient was re-admitted for the fourth time on Oct. 31, 1955, with increased chills and fever of one month's duration. Examination by the physician at this time revealed that the tongue deviated to the right but no other paralysis or involuntary movement or muscle pain was present. The subsequent treatment was directed entirely to the disease process and is not pertinent to this presentation. The patient was discharged Nov. 8, 1955, following appropriate medical treatment which was to be followed in her home town. Treatment under her local physician's direction continued until her death from Hodgkin's disease in June, 1957.

Muscle action of the trapezius is always interesting whether one studies Wilhelmine G. Wright's work of 1928[2] or Signe Brunnstrom's articles of 1941[3] and 1946.[4] Later work by Inman, Saunders, and Abbott[5] sheds new light particularly on the rotary component of the trapezius. Although these and other authors do not agree on all of the elements of action of the three sections of the trapezius, a conservative compilation of the many opinions would indicate that the upper fibers of the trapezius act

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Figure 2.

primarily in elevation of the scapula, but they are assisted by the levator scapulae and the rhomboids major and minor.

The middle fibers of the trapezius are in direct line for straight adduction of the scapula; the upper and lower fibers assist in this action as do the rhomboids, both major and minor. The lower fibers are particularly active in depression and upward rotation of the scapula during flexion of the shoulder.

Both the upper and lower sections assist in rotation of the scapula, but their action varies in degree as flexion or abduction changes from 35 degrees to 140 degrees.[5] Brunnstrom's report of 1946[4] would indicate that paralysis of the trapezius disturbs the scapulohumeral rhythm but the arm can be abducted without difficulty since the serratus magnus gives fixation to the scapula. It is felt that this action was perhaps possible for the young, well conditioned war casualty but is not the typical finding for persons in civilian life, such as the patient reported here, and that paralysis of the trapezius results in considerable disability.

Figure 1 shows the inability to elevate the scapula due to paralysis of the upper trapezius fibers. In this instance an untrained levator scapulae present in a shoulder which is voluntarily splinted because of pain is unable to execute elevation to parallel that of the unaffected shoulder. Note also should be made of the apparent lateral shift of the neck to the unaffected side.

Figure 2 shows abduction against gravity but without additional weight. Easy abduction was obtained to approximately 50 degrees. Effort beyond this point caused much more marked deviation, and the patient was requested to hold the position at this angle to show the winging of the inferior angle of the scapula attributed to loss of stability in the lower fibers of the trapezius as well as in the middle fibers of the trapezius. A shadow would indicate that the rhomboids contributed to the stabilization of the scapula to a marked degree at this time.

As shown in figure 3, the loss of the middle and lower fibers allowing abduction and elevation of the scapula is particularly obvious. These units of the trapezius by stabilizing the scapula would have

Figure 3.

assisted in flexion of the arm. Flexion beyond the point illustrated was carried out with extreme effort and was not considered practical or functional.

Figure 4 indicates flexion with the additional resistance of a 3 pound weight. The motion was stopped at this point for the purpose of study and does not signify the maximum possible range for the patient with this procedure. The increased prominence of the entire vertebral border is particularly noticeable in this plane and denotes the obvious lack of middle and lower fibers of the trapezius. This degree of winging is typical of full trapezius paralysis and is more marked than winging due to serratus magnus paralysis where it is more limited to the inferior angle. Without the depression stability of the lower fibers, the right scapula is also more elevated than the unaffected left scapula.

Figure 5 indicates the same position but with the motion carried beyond the 90 degree flexion position to approximately 155 degrees of flexion. Although the scapula is abducted far more than on the uninvolved side, the vertebral border is not nearly so prominent as in the early stages of flexion. The additional support which the shoulder is receiving from other stabilizers and shoulder rotators is perhaps significant at this position. It might be as-

Figure 4.

Figure 5.

sumed that the serratus anterior and the rotators of the humerus are much more active in the motion described.

These pictures were taken approximately eight weeks after surgery for radical neck dissection and are of an untrained patient who had been confined to bed and restricted in activity due to general illness.

A case of paralysis of all three sections of the trapezius muscle has been presented. Motion of the right upper extremity and of the right shoulder girdle in view of such paralysis has been analyzed. Peripheral nerve injuries and resulting paralysis offer good material to the physical therapist for the study of functional anatomy and a more frequent use of such cases for teaching purposes is suggested.

REFERENCES

1. Haymaker, Webb, and Woodhall, Barnes: Peripheral Nerve Injuries, Principles of Diagnosis, Ed. 2. W. B. Saunders Co., 1953.
2. Wright, Wilhelmine G.: Muscle Function. Paul B. Hoeber, Inc., 1928.
3. Brunnstrom, Signe: Muscle testing around the shoulder girdle, J. Bone Surg., Am. Vol., 23:2 (April), 1941.
4. ———: Comparative strength of muscles with similar function: A study on peripheral nerve injuries of the upper extremity, Physiotherapy Rev., 26:2 (March-April), 1946.
5. Inman, V. T., Saunders, J. B., and Abbott, L. C.: Observations on the function of the shoulder joint. J. Bone Surg., Am. Vol., 26:3-32, 1944.
6. Daniels, Lucille, Williams, Marian, and Worthingham, Catherine: Muscle Testing: Techniques of Manual Examination. Ed. 2. W. B. Saunders Co., 1957.
7. Williams, Marian, and Worthingham, Catherine: Therapeutic Exercise for Body Alignment and Function. W. B. Saunders Co., 1957.

The *Review* invites case reports from physical therapists who have followed an interesting course of treatment with or an unusual response to treatment by patients having one of the conditions listed below.

Bronchial asthma
Trauma resulting from electricity
Extensive third-degree burns
Rheumatoid spondylitis in adolescence
Still's disease
Peripheral neuritis
Polyneuritis
Osteoporotic kyphosis
Gout in adolescence
Post-diptheritic paralysis

Note: Suggestions for preparation of case reports were published in the October 1957 issue of the *Review*, pages 666-667. Reprints of the suggestions may be requested by writing to the *Physical Therapy Review*.

Design and Measurement of Training Chairs for the Cerebral Palsied Child

Gordon G. Robertson, M.A.

Introduction

An understanding of the basic sequences of growth is a prime requisite for any therapist who is responsible for a training program of encephalopalsied children. Dr. Arnold Gesell has described certain behavior patterns which are characteristic of normal growth. Basically, an infant can be expected to lift his head and hold it erect momentarily at 6 weeks, sit without support from 6 to 8 months, crawl by 7 months, stand without support by 1 year, and walk at the age of 12 to 15 months. Cerebral palsied children cannot be expected to maintain this schedule, and various artificial devices must be provided to enable them to accomplish these developmental norms.

One of these devices is the special training, or relaxation, chair that is designed to meet the individual difficulties of the child. To satisfy the needs of a general therapy program, the chair must be comfortable, as no child can be expected to tolerate a position which constantly irritates and antagonizes him; and it should be durable since this equipment, with minor adjustments, may serve the patient for several years. Frequently two, and in rare cases, even three chairs are needed as the child grows. Ease of handling, which makes it possible to transport the chair in and out of doors, adds to its usefulness.

We have excellent facilities for the construction and maintenance of these training chairs at our Institute. A modern, well-equipped, wood shop is located adjacent to the physical therapy department, and a carpenter is available to build, repair, and modify the chairs and other equipment.

Physical Therapist, Cerebral Palsy Institute, Norman, Oklahoma.

Types of Relaxation Chairs

We use two types of relaxation chairs, *bucket* and *standard*.

The *bucket* model is designed primarily for patients with an opisthotonos or a tonic neck reflex and/or those who have extreme difficulty with head and sitting control. Its construction permits the seat-back-footrest portion to be pivoted as far as 45 degrees from the perpendicular by means of a dowel rod. This type of chair is usually indicated for children diagnosed as tension athetoids, rigidities, and the most severe custodial cases.

The *standard* model has no moving parts, but is constructed so that the seat-back-footrest portion of the chair is tilted 5 degrees from the perpendicular. Its design is identical to that of the bucket chair except the dowel rod is eliminated. It is recommended for ataxics, most spastics, and for the moderately involved patient who has good head balance.

Description of Materials

After years of experimentation we have selected ¾ inch plywood for the seat, sides, back, arms, and footrest portions of the chairs. Formerly redwood and white pine were used, but these materials were too unstable; however, maple, oak, birch, and other hardwoods can be ideally substituted. The base structure is composed of two, 1 inch by 4 inch planks and four, 2 inch by 4 inch boards. A ¾ inch wood dowel is used for the bucket models. Three inch casters are used on both types of chairs.

Measurements

In order to insure a perfect fit an order form sheet is filled out and sent to the wood shop. (Fig. 1) This sheet contains all information pertinent to the completion of the chair. Miscellaneous information such as foot control positions and placement of trunk supports is included under *Remarks* or on the reverse side of the paper. It is suggested that periodic checks be made with the carpenter and therapy staff while the chair is under construction.

The type of chair to be used is prescribed by the orthopedic consultant. His prescription may

CEREBRAL PALSY INSTITUTE

Order Form for Special Equipment

SPECIAL CHAIR

TYPE OF CHAIR_____ NECK REST_____ PADDING_____

Height of Back_____ Width of Seat_____

Depth of Seat_____ Height of Tray_____

Angle of Back with Seat_____ Degree of Tilt_____

Seat to Footboard_____ Angle of Footboard Tilt_____

TRAY:

Width_____ Length_____ Depth of Cutout_____

Width of Cutout_____

DATE PROMISED_____

REMARKS_____

NAME OF CHILD_____

PARENTS' NAME _____

ADDRESS_____

Figure 1.

include such accessories as headrests, trunk supports, and degrees of tilt.

As a preliminary to the actual measurement, the patient while using his braces is placed in either a regular straight back chair, a stool set against the wall, or an available training chair. The latter is preferred by our department though any of the above would be acceptable. The parents or a therapy aide steadies the patient during the fitting. The following formulas are used to determine the various measurements:

1. *Height of back* is measured from the seat to the first thoracic vertebra.
2. *Depth of seat* dimensions may be determined by measuring the distance from the back of the trial chair or the wall to the knee joint, less 1 inch.
3. *Seat to footboard* is obtained by measuring from the knee joint to the tuberosity of the calcaneus, minus 1½ inches.
4. *Width of seat* varies according to the diagnosis. Patients with tremor and athetoids are fitted snugly, allowing as little as ½ inch clearance on each side, whereas the measurement of a spastic child allows from 1 to 2 inches on each side, according to the individual requirements for training.
5. *Height of tray* is determined by measuring from the xiphoid process to the seat. We have used many other methods in the past for this dimension but now believe this to be the most accurate. At times, however, the tray may be raised an inch for occupational therapy activities.
6. *Angle of back with seat* should be 90 degrees, unless a severe extension thrust would dictate an 85, 80, or even 75 degree angle.
7. *Angle of footboard tilt* should measure 90 degrees, unless an angle of 85 degrees would permit better foot placement.
8. *Degrees of tilt:* All *standard* chairs are usually tilted 5 degrees from the perpendicular. *Bucket* chairs are made to tilt from 30 degrees to 45 degrees.
9. *Tray:* An 18 inch width and 22 inch length is used for small children. The length is often increased to encourage reach, grasp, and release ac-

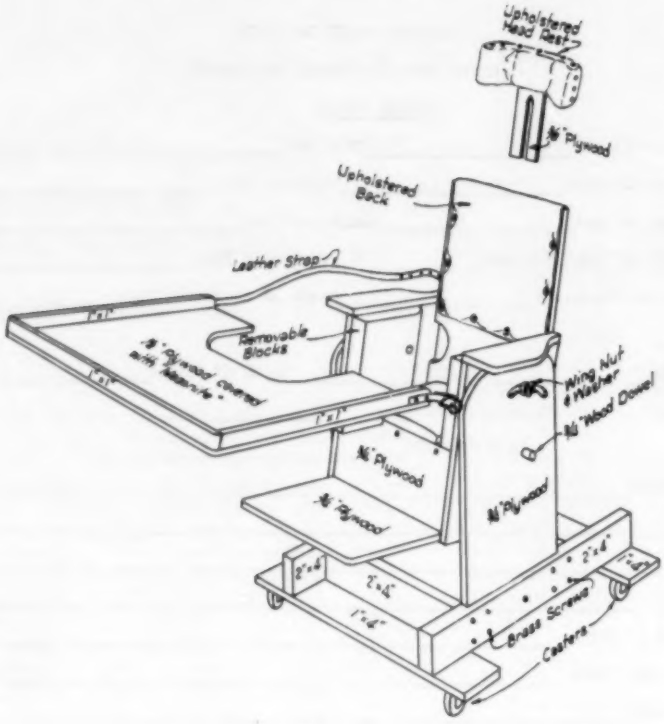


Figure 2.

tivities, but the width is rarely changed. A U-shaped cutout fits snugly around the thorax; this prevents the hands and arms from slipping under the tray, aids in teaching sitting balance, and promotes better feeding technics.

ACCESSORIES

1. *Headrests*

The head supports are constructed from blocks 4 inches by 4 inches that are cut into a concave shape to give support to the occiput as well as to the sides of the head. Recently, we have been experimenting with a V-shaped block and have found it to be quite satisfactory. A ⅜ inch by 3 inch plywood board is used to attach the headrest to the chair back (See fig. 2). A ⅜ inch slot is cut in the center of the plywood and the headrest is anchored at the desired height with a wing nut that extends through the back of the chair. (Height adjustment is thus easily made by a simple twist of the wing nut.) One inch by 1 inch blocks about 5 inches long are placed on either side of the slotted board to give added support and prevent excessive lateral movement.

2. *Trays*

The surface of the tray or desk is made of Masonite glued to ½ inch plyboard. Borders of birch 1 inch high are placed across the front and sides of the tray. Two small L-shaped boards cut from 2 inch by 2 inch blocks are installed on the under side of the tray in such a manner as to permit the tray to slide into position over the armrests and still give firm lateral support. The tray is held in position by a ¾ inch leather strap that buckles behind the chair.

3. *Trunk supports*

Occasionally a pair of thoracic supports are needed to aid in the training of head and sitting balance. These supports may be easily attached to the back of the chair so that they extend under the axilla. Cut to the desired length, 2 inch by

2 inch pieces are usually sufficient when padded with foam rubber or rubber axillary pads from a set of crutches.

4. *Foot control boards*

When stabilization of the feet is indicated a tracing of the child's shoes is made and an identical pattern is cut with a jigsaw in an inch board. The board, with its shoe-windows, is then placed on the footrest and straps are attached in order to prevent the feet from slipping out of the wells. This design insures more accurate and secure placement of the feet.

5. *False sides*

Minor adjustments, such as lowering the footrests and raising the tray or back, may be made by simply adding a board cut to the required dimensions; however, a revision in the width of the seat requires a maximum repair effort. This problem may be solved by adding a block in the sides of the seat. (Fig. 2) The block may be removed or decreased in width when added space is required.

6. *Posture straps*

Possibly the most useful accessory on the chairs is the posture tie. This strap enables the patient to maintain a more correct posture and also serves as a valuable safety belt.

Each chair is constructed with two small half-moon shaped openings in the back about 1 inch above the seat. From the front of the chair, a piece of orthopedic stockinette is inserted in one of these openings, pulled behind the chair, and back through the other slot. A single overhand knot is tied so that the knot fits firmly against the back of the chair and the two ends are draped down the middle of the seat and over the footrest. The child is then placed in the chair. The loose ends are brought up between the legs, crossed over each thigh and reinserted through the slots. A firm bowknot completes the procedure after the stockinette is drawn tightly enough to force the buttocks against the back of the chair.

PADDING

A seat and back of ½ inch firm slab sponge rubber are placed in all chairs to insure the maximum of comfort. Plastic leatherette with re-inforced backing is used to cover the sponge rubber and is held in place by ball-topped upholstery tacks. Felt, orthopedic stockinette, sheet wadding, and gauze may be used, in addition to the sponge rubber, to prevent irritation to various parts of the body.

Figure 3.

CARE AND CLEANING

It is recommended that all chairs and trays be cleaned daily with a soap detergent and hot water. A monthly lubrication of the wheels is desirable to prevent rust and malfunction. We have found a liquid rubber lubricant or three-in-one oil to be the most satisfactory. Additional coats of shellac and varnish may be applied to eliminate chipping or splintering.

REVIEW WITH PARENTS

When the chair is finished it is moved to the physical therapy department where the upholstery is tacked into place. The parents are present when the chair is fitted and if any corrections or additions are necessary they are completed while the parents wait.

The parents receive a detailed explanation of the chair's use. This includes: (1) why the chair

is being provided, (2) how to place the child in the chair properly, (3) recommended time in the chair, (4) a brief explanation of the parts and working order, and (5) instructions regarding care and cleaning.

After instructions have been completed and questions answered, the parents are asked to review verbally the entire procedure before leaving. When the child is recommended for inpatient training, this chair accompanies him and serves as an excellent transportation device in addition to its primary function of balance training.

REFERENCES

1. Egel, Paula F.: Technique of Treatment for the Cerebral Palsy Child, St. Louis, The C. V. Mosby Company, 1948.
2. Cruickshank, William M. and Raus, George M.: Cerebral Palsy, Its Individual and Community Problems, Syracuse University Press, 1955.
3. Cerebral Palsy Issue, Phys. Ther. Rev., 28:3 (May-June) 1948.
4. Spencer, Helen: Balance training in cerebral palsy: Principles and procedures, Phys. Ther. Rev. 37:8 (Aug.) 1957.

Rubber Urinal Adaptation for Incontinent Boys

Helen Rohrer, B.S., and
Gertrude Bartlett, M.A.

Enrolled at Gaenslen School this year are four boys who are incontinent and consequently must wear a diaper arrangement in order to attend school. One is severely handicapped with cerebral palsy; another is a spina bifida; the third, a paraplegic; the fourth had a fractured pelvis and ruptured urethra from an automobile accident. All four are too undeveloped to wear a rubber urinal without leakage around the top, causing skin irritation. These boys are now successfully using a combination rubber urinal and finger cot, or surgical finger.

Practice will make the following procedure easier. The tip is cut from the finger cot, which can be purchased at any drug store. The finger cot is partially rolled up, then stretched and placed over the penis. The rolled part is unrolled the length of the penis. Elastoplast tape may be used to keep the finger cot in place if it tends to slip down. Hold the finger cot in place and pull the tip end carefully down to about 1 inch beyond the penis. This end is placed in the cup of the urinal which is strapped tightly to the body. The urinal tube and bag are strapped to the inner bar of a brace or inner side of either leg.

The boy with a fractured pelvis and ruptured urethra is able to function well without the top and straps of the urinal. The finger cot is attached by means of a tight rubber band to a short tube which leads to a plastic bag strapped to the mid-thigh. This method is helpful if the skin is sensitive to continuous contact with rubber.

Another advantage of this procedure is that the boys, with the exception of the cerebral palsied child, can take care of draining the bag themselves. If it is medically advised that urinary output be measured, as in the case of the paraplegic, the bag can be emptied into a graduated container.

Physical Therapists, Gaenslen School, Milwaukee, Wisconsin.

Proprioceptive Neuromuscular Facilitation Film

A 35 minute color film with sound is available to chapters and schools of physical therapy at a rental fee of $10.00. One copy of the film has been given to the Association by the California Rehabilitation Center. Requests from states east of the Mississippi should be directed to the American Physical Therapy Association, 1790 Broadway, New York 19, New York; rental is payable to the American Physical Therapy Association. Those west of the Mississippi should write to California Rehabilitation Center, 2600 Alameda, Vallejo, California; rental is payable to the California Rehabilitation Center. All requests should be submitted two weeks in advance of date of showing. Alternate dates are desirable since both copies may have prior bookings.

Navy Recruits Physical Therapists

The Navy Recruiting Service is now authorized to recruit fully qualified physical therapists (women) for appointment and active duty in the grade of Ensign, Women's Specialists Section, Medical Service Corps, U. S. Naval Reserve.

Applications are also being accepted from physical therapy students for consideration for appointment as Reserve officers in the grade of Ensign in the Medical Service Corps for active duty while completing their final year of training.

For information or submission of application, communicate with your nearest Office of Naval Officer Procurement. Additional information may also be obtained from the Chief, Medical Service Corps, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

Index to Current Literature

(continued from page 520)

Robert W. Boyle, Minnesota M., 42: 417-423, April 1959

POLIOMYELITIS

Poliomyelitis Vaccine Preparataion and Administration. J. E. Salk, J. Am. M. Ass., 169: 1829-1838, Apr. 18, 1959

PSYCHIATRY

Roots of Prejudice Against the Handicapped. William Gellman, J. Rehab., 25: 4-6, 25, January-February 1959

REHABILITATION

A Dysphasia Rehabilitation Clinic. C. M. Godfrey, Canad. M. Ass. J., 80: 616-618, Apr. 15, 1959

Rehabilitation Program is Education for Living. Jane Barton, Mod. Hosp., 92: 85-91, April 1959

Role of the Work Classification Unit of the Los Angeles County Heart Association. S. S. Sobin, W. G. Frasher, C. A. Alexander and L. Horovitz, Arch. Phys. M., 40: 161-165, April 1959

Self-Reliance is Part of Plan for Long-Term Care. Louis Allen Arbramson, Mod. Hosp., 92: 76-81, April 1959

Symposium of Rehabilitation (Seven papers). Faculty Members of the State University of Iowa College of Medicine, J. Iowa M. Soc., 59: 198-220, April 1959

The Team Approach in the Rehabilitation of Mentally Retarded Spastic Paraplegia. David C. Harkins and O. D. Carter, J. Maine M. Ass., 50: 118-119, April 1959

RESPIRATION

Application of Abdominal Pressure for Artificial Respiration. J. P. Adamson, Leon Lewis and J. D. Stein, J. Am. M. Ass., 169: 1613-1617, Apr. 4, 1959

Mobilizing Patients Receiving Intermittent Positive Pressure Respiration. R. L. G. Sutcliffe and J. M. K. Spalding, Lancet, Lond., 1: 706-707, Apr. 4, 1959

Respiratory Function Tests. H. I. Goldman and Margaret R. Becklake, Am. Rev. Tuberc., 79: 457-467, April 1959

Tracheostomy for Respiratory Muscle Failure in Infants and Children. R. Randolph Bradham and John R. Paul, Jr., Am. Surgeon, 25: 242-247, April 1959

Tracheotomy in Acute Respiratory Disease. L. A. G. Davison, Lancet, Lond., 1: 597-600, March 21, 1959

Treatment of Pulmonary Emphysema. G. N. Bedell and P. M. Seebohm, J. Am. M. Ass., 169: 1699-1702, Apr. 11, 1959

ULTRASOUND

Assessment of the Results after Ultrasonic Therapy. Olov Lindahl, Rheumatism, Lond., 15: 41042, April 1959

Effects of Ultrasound on Growing Bone. Justine L. Vaughen and Leonard F. Bender, Arch. Phys. M., 40: 158-160, April 1959

MISCELLANEOUS

Planning a Research or Demonstration Project. Stephen A. Richardson, J. Rehab., 25: 10-13, January-February 1959

The Diagnosis of Systemic Disease by Examination of the Hand. Charles D. Cobau and Paul R. Winder, U. Michigan M. Bull., 25: 67-73, March 1959

The Fallacy of the Term "Whiplash Injury." Paul W. Braunstein, Am. J. Surg., 97: 522-529, April 1959

Coming Meetings

Aug. 5—15	Second Annual Health Exposition, The Coliseum, New York City
Aug. 23—26	American College of Hospital Administrators, New York City
Aug. 25—28	American Dietetic Association, Shrine Auditorium, Los Angeles
Aug. 30–Sept. 4	American Congress of Physical Medicine and Rehabilitation, Hotel Leamington, Minneapolis
Sept. 2	American Institute of Ultrasonics in Medicine, Hotel Leamington, Minneapolis

International Meetings

Sept. 6—12	Third Congress, World Confederation for Physical Therapy, Nouvelle Faculte' de Medicine, Paris
Sept. 7—11	World Medical Association, Queen Elizabeth Hotel, Montreal, Canada
Sept. 13—15	International College of Surgeons, North American Federation, Chicago

Editorial

As Others See Us

A short time ago there appeared in our local newspaper the report of an interest poll of teen-age youngsters. These young people had been asked such questions as, "What person would you most like to be like?" and "What profession would you most like to enter as a career?" The details of the census are unknown but one result should be of particular interest to us. Four per cent of the young women answered the career question by indicating their desire to be physical therapists. This response led the replies in choice of occupations by the young women polled.

This response, even though from a relatively small sampling should be most encouraging to all physical therapists. Such an attitude on the part of young people indicates a favorable understanding of the worthwhileness and attractiveness of the profession, at least this would be so in the minds of the social groups in which they live. It also points out a rise in social esteem for the members as well as for the profession itself.

During the past fifteen years our profession has shared in the tremendous emphasis placed on rehabilitation by the medical profession and the government. Along with other associate medical professions physical therapy has been assisted and promoted not only by medicine and government but by many private agencies and foundations.

These groups have promoted and financed research, recruitment, education, and practice as well as provided widespread informational campaigns to acquaint the public with the various professional services required in the area of rehabilitation and the care of the injured and handicapped. Without this help physical therapy could never have attained the present professional status and general acceptance it now enjoys.

On the other hand neither could the profession have arrived at nor can it maintain a state of high esteem or acceptance without the awareness of the public of the high quality of professional services provided by the individual practicing physical therapists. The individual physical therapist is the representative of the profession to the public. In his daily relations with doctors, patients, hospital and clinic staffs, and associates he is helping to form the mental image the public has of physical therapy. Good or bad, thinking or un-

Editorial

thinking, this is happening wherever and whenever physical therapists are in association with other people.

Since physical therapy services are provided by and for people, the personal relationships involved assume great importance. Consequently, the public picture of physical therapy may not be formed entirely by the expertness and efficiency of technical performance. The public may have difficulty in distinguishing between superior and average quality of actual treatment. It can be much more evaluative, however, in its relationships with those who provide the services. The public can and will identify a physical therapist who is truly interested in the welfare of people, who takes pride in himself and his profession, and who is concerned with the good he can contribute rather than with his own personal gain or affairs.

Good relations, then, are the "life's blood" of the services we provide. They determine the effectiveness of the procedures applied and present to the public the kind of people we are. This means that background knowledge and the application of skills are of genuine service to the public only when our relations are of the highest order.

When an increasing number of thoughtful young people are convinced of the valuable services provided by physical therapists and that physical therapy is a worthwhile career, the future of our profession will be assured.

AGNES P. SNYDER
President, American Physical Therapy Association

How to Arrange to Borrow a Print of *The Return*

A complete listing of the film libraries where the Association's latest film is on deposit may be found on page 99ff. of the February, 1959, issue of the *Physical Therapy Review*. If the film library nearest you cannot supply you on the date you need *The Return*, look through the list to see if another library will service your state. National Office will send you a print if it is unavailable locally. In addition to the 38-minute version, there is a TV version running 28 minutes. There is also a 58-second TV spot with sound track, excerpted from *The Return*. Both of these are available for borrowing from the National Office. *The Return* was chosen by Howard Thompson of *The New York Times* as one of the 10 best nontheatrical films of 1958.

Association News

Physical Therapy Legislation in Oregon

The Physical Therapy Registry Law being signed by Governor Mark O. Hatfield. (from left to right) Robert Elfstrom, main sponsoring legislator; Larry W. Standifer, past legislative chairman, Oregon American Physical Therapy Association Chapter; Governor Hatfield (seated); and Marion Showers, past president of the Oregon Chapter. Enactment of the Oregon Physical Therapy Practice Act was announced in the July *Review*, page 486.

Chapter News

Southern California

Among the suggestions for the summer—
Polio is not whipped yet—
have a shot for the road.

Northern California—San Jose District

The District presented copies of the *Physical Therapy Review* (1950-1959) to the Santa Clara County Medical Society Library.

Colorado

The May issue of the *High Altitude Newsletter* gives an extensive report of the year's Chapter activities. The Legislative Committee report indicates a busy and successful year. The student news item relates the part taken by the class in an evening program for students from Boulder.

Idaho

A July meeting of the Chapter combined a business meeting and recreational weekend. The Chapter also reports that the Idaho delegation to the Physical Therapy Section of the Association of Western Hospitals meeting in May was the largest representation of therapists.

Michigan—Eastern District

The District program for May included: "Current Techniques in Pulmonary Resections" and "Physical Medicine in Chest Surgery." Under the topic "What Some Missed" is a résumé of the previous meeting.

New Mexico

Front page news of the Chapter newsletter is a notice "4 Your Date Book" which includes the dates of important upcoming meetings. "Balancing the Books" reveals that address changes, including postal zone numbers, should be made so that one may answer "No" to the question—Have you been "booked" on the charge of squandering professional time and finances?

New York Chapter

The printed program for the Annual Chapter Meeting reproduced letters of welcome from the Governor of New York, Nelson A . Rockefeller, and Robert J. Wagner, Mayor, City of New York; as well as a letter of greeting from Agnes P. Snyder, President, APTA.

Oklahoma

The April Chapter meeting was a membership participation program. Physical Therapy of Emphysema Patients and Physical Therapy in Foreign Lands were topics presented by two Chapter members. The senior physical therapy students provided entertainment in a lighter vein during the evening session.

Utah

The Chapter was host to the physical therapy section of the Association of Western Hospitals meeting in Salt Lake City, May 4-7, 1959.

P. Bryan Walsh of Shrewsbury, Massachusetts, died in his plane May 29, 1959. Mr. Walsh received a bachelor of science degree at Boston University, Sargent College in June 1957. He held student membership in the Association, and since graduation had been an active member of the Massachusetts Chapter.

American Hospital Association Institute for Physical Therapists

November 9-13, 1959, Rice Hotel, Houston, Texas will be the time and place of the next Institute for physical therapists conducted by the American Hospital Association in cooperation with the American Physical Therapy Association. Announcements and applications have been sent to each active member. If you have not received this material please contact the American Hospital Association or the American Physical Therapy Association. Since enrollment is limited, it is suggested that you discuss the program with your administrator and submit your application promptly.

The program is planned to meet the needs of physical therapy staff in both large and small hospitals and will be concerned with the management function of the physical therapist within the department and the hospital. Disaster planning, safe practices in the physical therapy department, medical direction, planning for professional and nonprofessional personnel are only some of the topics to be discussed. There will be opportunities for both large and small group discussions. The Texas Chapter of the American Physical Therapy Association is hard at work planning for a successful Institute and looks forward to welcoming you.

Member Honored at Army Institute

Shown above are (left to right) Major Agnes A. Brigham, Lt. Col. Harriet S. Lee, Capt. Winifred Soady, Col. Ruth A. Robinson, and Capt. Agnes J. Rudberg.

At the close of the Ninth Semiannual Institute for Officers of the Army Medical Specialists Corps, held at Walter Reed Army Medical Center, a portrait of Lt. Col. Harriet S. Lee, former head of the corps, was hung on the walls of Walter Reed Army Institute of Research.

Marriages

Elaine B. Bastedo, of Chicago, Ill., to Donald F. Hamm, Santa Maria, Calif.
Barbara Carr, of Dallas, Tex., now Mrs. Barbara C. Schiltz, Dallas.
Dora Cochrane, of Oakland, Calif., now Mrs. Dora C. Grens, Sacramento, Calif.
Barbara Cope, of Houston, Tex., to John H. Kelly, Jr., Rosenberg, Tex.
Elizabeth Coutts, of Lancaster, Calif., to John Price, Lancaster.
Mary A. Eiseman, of Bethesda, Md., to Robert Duncan, Bethesda.
Margaret J. McCall, of Regina, Canada, to Necdet Alkan, St. Paul, Minn.
Jean E. McIntosh, of Wilbraham, Mass., to Richard L. McDowell, Wilbraham.
Edwina Pope, of Washington, D.C., now Mrs. Edwina P. DeChamplain, Washington.
Shirley A. Schneider, of Long Beach, Calif., now Mrs. Shirley S. Brown, Lynwood, Calif.
Patricia Tomcik, of Rock Springs, Wyo., to Paul Anselmi, Rock Springs.
Denny Vawter, of Seattle, Wash., to R. O. McWhinney, Denver, Colo.

Dues Notice

Annual dues were payable on May 1st. Your prompt response will be appreciated as a service to the Association and to insure your uninterrupted receipt of the *Physical Therapy Review* along with other membership privileges. Those who are not actively practicing physical therapy may apply for inactive membership.

National Office Statistical Reports....

Department of Chapters and Membership

Membership Report 1958-59

Membership:	May 1, 1958	May 1, 1959
Active	5,692	6,024
Inactive	1,765	1,927
Associate	42	39
Honorary	8	8
Life	65	77
Student	985	840
Total	8,557	8,915

New members:		
Active	731*	
Inactive	1	
Student	549	
		1,281
Reinstatements:		
Active	65	
Inactive	9	
		74
Transfers:		
Active to Inactive	355	
Inactive to Active	84	
Active to Life	9	
Inactive to Life	6	
Resignations:		
Active	39	
Inactive	35	
Life	1	
Associate	2	
		77
Deceased:		
Active	10	
Inactive	1	
Life	2	
		13
Dropped for non-payment of dues:		
Active	135	
Inactive	77	
Associate	1	
		213

The following members passed away during the year 1958-59:

Gordon Avery	Florence Brock
Miriam Best	Sarah Colby
M. Anne Blakely	Ruth Dupee
Margaret Erikson	Teresa Kronenberg
Sarah Harrison	John O'Brien
Erna Heisel	Joanne Peters
Corinne Way	

* Includes 68 who were not recent graduates and 28 foreign trained.

Physical Therapy Review

Circulation and Advertising Report 1958-59

Total Circulation	1957-58	1958-59
Members	6,839	7,031
Nonmembers	1,653	1,550
Total	8,492	8,581

Increase in Circulation 89

Advertising	1957-58	1958-59
Pages of space advertising	167.5	169.25
Pages of classified advertising	27.75	28.00

Slight increase in both sections

Special Issues

June 1958 — Conference Issue

November 1958 — Cerebral Palsy Issue

The *Review* goes to the following foreign countries:

Algeria	1	Haiti	1
Argentina	11	Hong Kong	1
Australia	52	Hungary	2
Belgium	17	Iceland	1
Bermuda	1	India	15
Brazil	10	Iran	3
Canada	97	Ireland, Rep. of	2
Canal Zone	4	Israel	21
Ceylon	1	Italy	17
Chile	3	Jamaica	1
China, Rep. of	1	Japan	8
Colombia	2	Jordan	1
Cuba	9	Korea	2
Czechoslovakia	3	Liberia	1
Denmark	20	Mexico	10
England	25	Netherlands	13
Finland	13	New Zealand	4
France	14	Nigeria	1
Germany	7	Northern Ireland	1
Greece	6	Norway	22
Guatemala	3	Pakistan	3

Panama	1	Thailand	1
Paraguay	1	Trinidad	1
Peru	1	Turkey	1
Philippines	3	Union S. Africa	15
Poland	7	U. S. S. R.	6
Portugal	3	Uruguay	2
Rumania	2	Venezuela	2
Saudi Arabia	1	Yugoslavia	3
Spain	4	Wales	3
Sweden	13	*W. Caroline Is.	1
Switzerland	30		

* Protectorate.

1958-59	531
1957-58	526
Increase	5

Chapter News in *Physical Therapy Review*

Chapter News items were submitted through Chapter and District newsletters and correspondence as follows:

California
- Northern
- San Diego
- Southern

Connecticut
Delaware
District of Columbia
Florida
- Central District

Illinois
Iowa
Kentucky
Louisiana
Maryland
Michigan
- Eastern District
- Western District

Minnesota
New Jersey
New Mexico
New York
- Greater New York District
- Hudson Valley District
- Western District

North Carolina
Ohio
- Northeastern District

Oklahoma
Oregon
Pennsylvania
- Western District

Puerto Rico
South Dakota
Texas
- Central District
- Southeastern District

Vermont
Virginia
Washington
Wisconsin

1956-57: 26 Chapters and Districts
1957-58: 33 Chapters and Districts
1958-59: 39 Chapters and Districts

Chapter Bulletins

In addition to correspondence with chapter and district officers, bulletins containing information on Association activities and guidance to chapters and districts were sent from the National Office in August, 1958, and January and March 1959. Special subjects presented with Chapter Bulletins or as separate memos included

- Legislative Activities—Preliminary draft of model physical therapy practice act
- Status of chapters' legislative programs
- Legislation meeting, Kansas City, Nov. 9 and 12, 1959
- Report of 1958 meeting of State Examining Committees (Seattle) and list of members attending
- Program for 1959 meeting of State Examining Committees (Minneapolis)
- Judicial Committee—Opinion on telephone listings and plan for review by chapters and districts
- Follow-up inspection and report
- Program Development—A program based on case reports
- Chapter Exhibits and Chapter Workshop—Annual Conference
- Chapter and District Annual Reports
- Potential members

Chapter Representation

The following chapters are represented on the Board of Directors, National Committees and *Review* Editorial Board, or have members serving as Section Officers.

Northern California
San Diego
Southern California
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Idaho
Illinois
Massachusetts
Michigan
Minnesota
Eastern Missouri
Western Missouri
Nebraska
New York
North Carolina
Oklahoma
Oregon
Pennsylvania
Tennessee
Texas
Utah
Virginia
Washington
Wisconsin

1956-57: 25 Chapters
1957-58: 27 Chapters
1958-59: 28 Chapters

Field Service 1958-59

During the year Consultants from the National Office visited chapters, districts, or executive committees as follows:

*Alaska
*Arkansas
Delaware
District of Columbia
Florida
- Central District
- Northeastern District
- Southeastern District
- West Coast District

*Idaho
Iowa
- Western District

Kansas
Massachusetts
Michigan
Minnesota
Southern Minnesota
Western Missouri
*Montana
*Nebraska
New Jersey
*Oregon, Southern Dist.
Pennsylvania, Western District
Rhode Island
South Carolina
*Texas
- *Southeastern District
- *Heart of Texas Dist.

Washington
West Virginia
*Wyoming

1956-57 Visits totaled 29
1957-58 Visits totaled 18
1958-59 Visits totaled 31

* Cooperation in visits provided by Consultant in Department of Professional Services.

Legislative Program

The Association, pursuant to its stated function Bylaw II, (c), "To promote legislation and to speak for physical therapists in regard to legislative action concerning general health and welfare programs," has since 1949 actively guided chapters in the achievement of laws to regulate the practice of physical therapy in the various states. The following record attests to our chapters' successes and reveals the rapidly developing trend toward more stringent regulation and, therefore, more adequate protection of the public.

Physical Therapy Practice Acts 1913-1959

Year of Enactment	State or Territory	Character of law	Amendments and Comments
1913	*Pennsylvania	Mandatory	Medical Board Regulations. Revised—1954
1926	*New York	Mandatory	Amended most recently in *1959*
1941	Connecticut	Permissive	Amended—1945, 1947, 1949, 1953
1945	*Hawaii	Permissive	Board of Health Regulations. Amended—1957, 1958
1947	Maryland	Mandatory	Amended—1949
1949	Washington	Permissive	
1951	Florida	Permissive	Amended—1957
	Georgia	Permissive	
	Illinois	Permissive	
	Massachusetts	Permissive	Amended—*1958—Mandatory*
	Minnesota	Permissive	Strengthened by Basic Science Law
	New Hampshire	Permissive	
	North Carolina	Permissive	Strengthened by ruling of Attorney General
	Oklahoma	Permissive	
1952	Arizona	Mandatory	
	South Carolina	Permissive	
1953	Arkansas	Permissive	Amended—*1959—Mandatory*
	California	Mandatory	Amended—*1959*
	New Mexico	Mandatory	
	Wisconsin	Mandatory	
1955	Delaware	Permissive	
	Maine	Mandatory	
	Nevada	Permissive	Amended—1957, *1959—Mandatory*
	South Dakota	Mandatory	
	Tennessee	Mandatory	
1957	Alaska	Permissive	
	Indiana	Mandatory	
	Nebraska	Mandatory	
	Vermont	Mandatory	
1958	Kentucky	Mandatory	
	Virginia	Mandatory	
1959	Colorado	Mandatory	
	North Dakota	Mandatory	
	Oregon	Permissive	
	Utah	Mandatory	

*Enactment of laws or regulations were not sponsored by Chapters.

NOTE:

Permissive–Permits those who meet the educational qualifications as set by the laws to register as physical therapists and only those who are duly registered may call themselves registered physical therapists.

Mandatory–Provides that to practice physical therapy in the state, a person must be duly licensed and/or registered.

The distinction between "permissive" and "mandatory" is based on wording of the law. Interpretation or lack of enforcement may strengthen or weaken the intent of the existing laws.

SUMMARY

As of May 19, 1959, there are 35 laws in effect—21 are considered "mandatory;" 14 are "permissive." With two "permissive" laws strengthened by interpretation, in effect there are 23 "mandatory" and 12 "permissive" laws.

Department of Professional Services 1958-59

Clinical Facilities Visited

By state and city with number of facilities visited

Alaska		*Michigan	
Anchorage	5	Detroit	5
Fairbanks	1	East Lansing	1
Mt. Edgecumbe	1	Okemos	1
Seward	1	Missouri	
Sitka	1	Kansas City	1
Arkansas		Springfield	3
Ft. Smith	4	Montana	
Hope	1	Billings	4
Jacksonville	1	Butte	2
Little Rock	5	Great Falls	2
Texarkana	2	Missoula	2
California		Nebraska	
Downey	1	Lincoln	9
Los Angeles	1	Omaha	9
*Delaware		Scottsbluff	3
Wilmington	7	Oregon	
*Florida		Eugene	3
Bay Pines	1	Portland	6
Coral Gables	1	Roseburg	3
Ft. Lauderdale	1	Salem	2
Gainesville	2	Pennsylvania	
Jacksonville	7	Philadelphia	4
Miami	6	*South Carolina	
Orlando	5	Charleston	3
Palm Beach	1	Texas	
St. Petersburg	7	Austin	4
Tampa	2	Dallas	4
Winter Park	2	Houston	4
Idaho		Temple	3
Boise	3	Waco	3
Illinois		Virginia	
Chicago	7	Richmond	3
Moline	2	Washington	
Iowa		Kennewick	1
Cedar Rapids	3	Richland	1
Council Bluffs	2	Seattle	15
Davenport	3	Spokane	5
Des Moines	6	Tacoma	7
Iowa City	4	Wenatchee	2
Knoxville	1	Winslow	1
Marshalltown	1	Yakima	6
Ottumwa	1	*West Virginia	
Sioux City	3	Charleston	3
Waterloo	3	Institute	1
Kansas		Marmet	1
Hays	2	Milton	1
Kansas City	3	Parkersburg	1
Lawrence	1	Wyoming	
Topeka	5	Cheyenne	2
		Laramie	1

* Cooperation in clinical visits provided by Consultants in Chapter and Membership Department.

21 States, 80 Cities, and 248 Facilities

Poliomyelitis Assignment Service

1956-57	1957-58	1958-59	
5	6	0	Physical therapists on duty on May 1, 1958
43	4	13	Requested for emergency situations during 1958-1959
2	1	1	Cancelled before reporting for duty
38	10	10	Completed temporary assignments of three to six months' duration
6	0	2	Physical therapists on temporary duty assignments on Apr. 30, 1959.

Placement Service

A. Assistance to American Physical Therapy Association members in locating new positions.

1956-57	1957-58	1958-59	
139	174	201	Currently active
225	224	225	Removed upon satisfactory location
364	398	426	Grand total served.

In addition every school of physical therapy has received listing of desirable openings for new graduates at periodic intervals.

B. Assistance to prospective employers.

1956-57	1957-58	1958-59	
420	380	401	Facilities currently active
569	532	547	Positions available
—	261	234	Physical therapists with experience needed
—	271	313	Satisfactory for new graduate
461	485	409	Closed following written report that needs had been met
41	35	48	Pending additional information before activation
922	900	858	Grand total served.

*Foreign Trained Physical Therapy Program

A. Entering the United States on an *Immigration Visa*:

1956-57	1957-58	1958-59	
26	61	45	meeting requirements (including those planning to retake the examination)
47	53	69	pending
21	15	31	completed requirements (passed examination or by reciprocity with state examination)
(2	6	11)	failed examination (planning for retake)
8	11	11	plans changed, did not arrive in United States
24	13	17	did not complete requirements (remaining in United States)
16	7	17	left the United States (without completing requirements)
142	160	190	Total receiving assistance

B. Entering on an *Exchange Visitor Visa*:

1956-57	1957-58	1958-59	
19	37	38	on traineeship
30	26	31	pending arrangements
10	13	19	plans changed—did not arrive in United States
54	21	26	completed traineeship and left the United States
1	2	—	other
114	99	114	Total receiving assistance

C. Entering on a *Visitor's Visa*:

1956-57	1957-58	1958-59	
36	11	10	completing observation visits—left United States
—	4	—	pending arrival
6	3	3	making observation visits at present time
2	4	—	plans changed
44	22	13	Total receiving assistance
300	281	317	Grand total receiving assistance

Department of Professional Education 1958-59

I. ADVISORY SERVICES

A. Education for Physical Therapy

1. Currently approved curricula: re-survey visits to 2; visits to 3 others; assistance on miscellaneous topics through correspondence and conference to several.
2. Developing curricula: survey visits to 3; field visit to 4 others; correspondence and conference with 5 additional; and early inquiries from 5 locations.
3. Career guidance to prospective students, counselors, teachers, librarians, parents, and members through correspondence and office conference.
4. Preparation of film data sheets, references, teaching aids for instructors and other members.

B. Recruitment and Public Relations

Advisory service was given by correspondence on 388 requests for service by members. One hundred fifty-two other organizations and individuals received service on problems of recruitment and public relations. The Woman's Auxiliary in 10 states received service from this office. One significant development this past year has been the variety of contact with public, private, Catholic, and Lutheran high schools in 21 states. Contacts have been with librarians, guidance counselors, school nurses, teachers, science teachers, audio-visual specialists, administrators, and individual schools. Variety of contact is also noted in our dealings with hospitals: administrators, superintendents of nursing, public relations directors, and physical therapy department heads—both APTA and non-APTA affiliated. Great variety is apparent in general in the kind of organizations asking our help.

C. Areas in which our advisory services have been inadequate to the need

During the past year, we have had requests from members, physicians, and organizations for materials which would serve to interpret the profession of physical therapy to special segments of the public. These requests have been for help in developing public relations programs for special publics, for exhibits, posters, and printed materials. This is an area in which our resources are conspicuously lacking. There is a steadily increasing need for this kind of service.

II. COMMITTEE AND ORGANIZATION ACTIVITIES

A. APTA: Advisory Committee — Professional Education (2 meetings); Committee to Study the APTA Program for Foreign Trained Physical Therapists; 1959 APTA-OVR Institute Committee; Board of Directors and Executive Committee; Physical Therapy Fund, Inc. (Members Meeting); UCP Scholarship; Graduate Study; Advisory Committee on Chapter and Membership activities.

* Conducted in cooperation with the Department of Chapters and Membership and the Department of Professional Education.

B. Other Organizations: The National Foundation Scholarship Committee; Council of Physical Therapy School Directors (and 2 of its Regional Meetings); OVR Advisory Panel on Physical Therapy; Advisory Committee on Physical Therapy Education, AMA Council on Medical Education and Hospitals; American Personnel and Guidance Association Annual Conference; National Health Council, Recruitment for Health Careers; National Convention, Woman's Auxiliary to the AMA; United Cerebral Palsy Associations of New York State; The National Foundation's Health Scholarship Program.

III. SPECIAL PROJECTS

A. Monthly bulletins to schools; development and distribution of film data sheets.

B. Five issues of "Recruitment Notes," with appropriate enclosures, distributed to chapters, districts, schools, Board of Directors.

C. Grant requests—to The National Foundation for support of work centered in Department of Professional Education; to Office of Vocational Rehabilitation for support of annual Institute for teaching personnel; and a second one for program projected by Graduate Study Committee; to UCP for scholarship grant.

D. Liaison to five committees entailing seven meetings.

E. Administration of grant for 15 traineeships for graduate study; and of UCP grant for scholarships.

F. 1959 APTA-OVR Institute for teaching personnel.

G. Exhibits prepared for: Annual conferences of American Personnel and Guidance Association, APTA, American Occupational Therapy Association, and National Society for Crippled Children and Adults; and for New York City Health Show.

H. Revisions of "Vocational Guidance Manual" and manual of "Information and Procedures for Physical Therapists Trained Outside of the USA . . .

I. Cooperated with guidance and counseling groups re availability/revision of career materials and occupational monographs—B'nai Brith; "Highlights," New York State Education Department; "Information Bulletin"—Vocational Advisory Service, New York; "The Catholic Counselor," "Career Guidance Index," "Career Index," "Vocational Guidance Quarterly," "Your Future Occupation."

J. Developed the following new material:

1. Career brochure "There's Work To Be Done"
2. Career brochure "Your Dream of Tomorrow"
3. Film Discussion Guide
4. Film Flyer
5. Film informational piece to be distributed to audience

K. Arranged for the distribution of *The Return* with 60 film libraries

L. Publicity coverage on: 3 on announcements of new staff; 1958 Conference; New York City Health Show; meetings—school directors, Bandera, Texas; APTA-OVR Institute; Finance Committee; Executive Committee; Judicial Committee; Advisory Committee, Education; Advisory Committee, Chapter and Membership; one release on the President. A total of 1,005 pieces of publicity went to the local papers concerning members' activities.

IV. STATISTICAL REPORTS

A. Analysis of Student Enrollment in Currently Approved School—1958

	1956		1957		1958	
	Stu.	Sch.	Stu.	Sch.	Stu.	Sch.
Junior	416	21	367	20	368	23
Senior	398	25	387	24	364	30
Certificate	402	28	421	30	312	29
Total students in final year Certificate and Senior			800		808	676
Graduates during calendar year			701		750	718

In the fall of 1958, there was a 7 per cent overall increase in college enrollment which, it is hoped, will affect the number of physical therapy students in another year or two. Your continuing assistance is sought in telling young people and their parents of physical therapy so that the potential capacity of schools will be filled.

B. Guidance Information

	Responses		
	Form Letters	Personal Letters	Office Interviews
1. Prospective students	5,280	151	63
2. Vocational guidance counselors	4,430	120	—
3. Postgraduate study		47	24
4. Foreign-trained		18	7
5. Summer jobs: volunteer, non-P.T. jobs, etc.		16	
6. Potential teachers			36

C. Scholarship Activities

1. United Cerebral Palsy Fund (awards in amount of tuition only)

1 committee meeting
46 applications considered
17 awards granted
10 schools represented

Highest single award	$ 800.00*
Lowest single award	200.00
Average award	568.53
Expended	9,655.00

* Maximum award limit.

2. Revision of Brochure: "Sources of Financial Assistance for Physical Therapy Students."

a) Number of agencies surveyed 381

(1) National

Foundations	115
Church and Service Groups	57
Fraternities and Sororities	15
Labor Unions	48
Medical Groups	12
Industrial Organizations	55

(2) State and Territorial

Board of Health	8
Societies of NSCCA	30
Agencies Service Groups, Clubs, (etc.)	41

b) Preparation of Brochure

(1) Analysis of sources listed in brochures

(a) National: 3 new added; 2 dropped; none changed to state listing; total listed 19.

(b) State and territorial: 10 new added; 6 dropped; none changed from national listing; 33 states and territories represented.

D. Postgraduate Study

1. Short-Term Courses: 5 surveyed; 21 publicized in *Review* a total of 108 times.

Subject areas:

Cerebral Palsy	28
Comprehensive Patient Care	2
Developing Concepts in Community Rehabilitation Services	1
Geriatrics	6
Neuromuscular Reeducation	24
Neurophysiology	10
Physical Medicine and Rehabilitation in Surgical Conditions	1
Preparation for Childbirth	2
Prosthetic Rehabilitation	34
Rehabilitation Technics and Principles	12

E. Teacher Recruitment

1. On file: 432 (412 old and 20 new listings).
2. Referrals: data on openings sent to 12 persons.
3. Teachers placed: 4.
4. Office conference with prospective teachers: 36.
5. Current situation: 6 vacancies in existing schools; 3 in prospective schools.

F. Teaching Aids

Film data sheets sent monthly to faculties of 39 AMA approved schools and of 2 prospective schools; to 23 members responsible for chapter programs and in-service training programs; and 33 members requesting film information on specific subjects.

G. Distribution of Recruitment Material from the National Office of the APTA.

Materials sent	1957–58	1958–59
Brochures (Physical Therapy Offers You)	87,011	39,751
School Lists	74,786	52,400
Financial Assistance	54,094	48,350
Fact Sheets	25,173	—
Film Folders	13,844	15,350
Film Strip Folder	12,744	14,550
The Job of the P. T.	1,081	1,080
The Career Poster	15,578	17,950
Vocational Guidance Counselor Manual	6,358	4,896
P. T. Record	40,564	—
Film *Return* Flyer	—	29,100
Back on His Feet	—	10,250
There's Work to be Done	—	89,500
Your Dream of Tomorrow	—	57,000
	331,233	380,177
Requests from:		
Chapters	371	401
Counselors and Libraries	4,391	4,430
Others	—	517
Prospective Students	4,886	5,280
	9,648	10,628

H. Recruitment

	1958-59
Consultative service to members by correspondence	388
To other organizations and individuals	152
Correspondence with 60 film libraries	325
Correspondence in connection with film handling	373
Publicity releases	1,005
Film showings handled through this office *Within Your Hands* (41 referrals; 45 handled directly)	86
The Return full version, 89; 28 min. version, 26	114
The Return — spot	14
Filmstrip	40

Membership Directory

An alphabetical listing of active, inactive, and life members as of Jan. 6, 1959 is now available. The following price schedule has been set:

To APTA members, chapters and districts—$1.00 each
To others 2.00 each

The supply is limited. Mail your check now to The American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

Third Congress

World Confederation for Physical Therapy

Third International Congress—Sunday, Sept. 6, 1959, to Saturday, Sept. 12, 1959.

Place of the Congress—The Congress will be held at the Nouvelle Faculté de Medécine, 45 Rue des Saints Péres, Paris VI^{e}, France.

Attendance—The Congress is open to all members of the American Physical Therapy Association.

Opening Ceremony—The opening Ceremony will be held in the famous Palais de Chaillot at 9 A.M. Monday, Sept. 7, 1959.

Theme—The theme of the Congress will be "Physical Therapy—Its Importance in Human Economic and Social Development" with emphasis on Neurology, Geriatrics, Orthopedic Surgery and Traumatology, Rheumatology, Heart and Chest Conditions, Aids and Prostheses, and Psychiatry.

Official Language—There will be simultaneous translation of the lectures and discussions in English, French, and German.

General Assembly—A meeting of the General Assembly of the World Confederation for Physical Therapy will be held during the Congress.

Congress Registration—Congress registration fees may be paid to the American Physical Therapy Association.

Full Members	$14.12
Social Associates	5.65
Student Members	4.23

Full Members are physical therapists, doctors and persons in allied medical fields. Social Associates are persons not eligible as, but accompanying, Full Members.

Final Plans are being completed to attend the Third Congress of the World Confederation for Physical Therapy in Paris during the week of Sept 6-12, 1959. The American Physical Therapy Association will have a fine representation.

The Chartered Society of Physiotherapy in Great Britain is anticipating the arrival of colleagues from overseas. Clinical visits in selected London hospitals are being scheduled. A party for overseas visitors is being planned between 6:00 and 7:30 P.M., on August 19 and September 28. Allow time for these important events and the opportunity to meet new friends and visit friends of long standing.

Additional details about professional visits and hospitality in London will be available at the National Office of the American Physical Therapy Association.

Additional Information

Details regarding chartered plane schedules, hotel accommodations in Paris, social events and dress may be found in the April and May, 1959 issues of the *Review*. For complete information on Pre- and Post-Congress courses that have been arranged in Great Britain, Denmark, Sweden and Western Germany refer to page 240 in the April issue.

SHORT TERM COURSES FOR GRADUATE PHYSICAL THERAPISTS

Title of Course	*Sponsor of Course*	*For Details Contact*	*Dates of Course*
Cerebral Palsy	The North Carolina Cerebral Palsy Hospital Durham. North Carolina	Dr. Lenox D. Baker Medical Director No. Carolina C. P. Hosp. Durham, North Carolina	Courses arranged according to individual need—duration 3 months
Physical Therapy in the Care of Neuromuscular Disease	Georgia Warm Springs Foundation Warm Springs, Georgia	Robert L. Bennett, M.D. Medical Director Ga. Warm Springs Found. Warm Springs, Georgia	January April October
Postgraduate Course in Technics of Treatment	Children's Rehabilitation Institute for Cerebral Palsy Reisterstown, Maryland	Christopher H. Wiemer Executive Director Children's Rehab. Inst. Reisterstown, Maryland	Oct. 5—Dec. 18, 1959
Technics of Neuromuscular Reeducation	California Rehabilitation Center Vallejo, California	Margaret Knott Chief P. T. Calif. Rehab. Center Vallejo, Calif.	January 1 April 1 October 1
Functional Bracing of the Upper Extremities	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Sept. 28—Oct. 2, 1959 June 13—17, 1960
Above-Knee Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Nov. 16—20, 1959
Below-Knee Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Dec. 14—18, 1959 Jan. 18—22, 1960 Feb. 29—Mar. 4, 1960 April 4—8, 1960
Upper Extremities Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	May 9—13, 1960
Postgraduate Cerebral Palsy Courses	Columbia University College of Physicians & Surgeons	Isabel P. Robinault, Ph.D. Supervisor, Postgraduate Cerebral Palsy Courses Columbia University College of Phys. & Surg. 630 West 168th Street New York 32, New York	Oct. 5—Dec. 4, 1959

Education

Student Column

Reflex Patterns and Facilitation Technics

Judith Schaub, B. A.

Robert Bennett states that "Muscle reeducation is the term used to designate that phase of therapeutic exercise devoted to the development or recovery of voluntary control of skeletal musculature."[1] Its great importance in the field of physical therapy cannot be overlooked.

Here at the School of Physical Therapy of the Mayo Clinic, facilitation patterns and other reeducation technics have been presented to the students by means of courses in functional anatomy, neurophysiology, and therapeutic exercise. A thorough knowledge of the attachments and functions of muscles was gained by study of anatomy. Observation and understanding of reflex patterns and flexion and extension synergies were obtained by study of the literature and from the results of laboratory experiments performed on decerebrate frogs. Practical knowledge was gained in therapeutic exercise classes and clinical observation. However, true understanding and knowledge of these technics, I have found, are obtained only by close observation of patients and by working with them clinically.

In my short time of observation in various departments I have observed several patients with hemiplegia caused by damage to the cerebral cortex. One particular patient could not carry out voluntary dorsiflexion of the ankle either in the antigravity position or the gravity-eliminated position, but by means of stroking, tapping and stretching of the tendons of these muscles a reflex contraction was elicited. Passive flexing of the big toe brought about dorsiflexion of the foot and flexion of the hip and knee. Extension of the index finger could not be performed except by stroking the tendon of the extensor indicis proprius muscle. In another patient I observed that when a powder board was used, motions of the shoulder were carried through a greater range of motion if the muscles worked against resistance, in this case sandbags. The action of the patient's working against the therapist's manual resistance with the normal upper extremity elicited associational movement in the affected arm, and tonic neck reflexes helped to reinforce these movements.

It is important for the therapist to realize and understand that reflex patterns are only a means to an end. They may help to elicit voluntary movement, but as soon as voluntary movement can be carried out by the patient, use of these patterns should be discontinued. Reflex movement without volitional contraction will be of no functional value to the patient later. The students in our school have come to realize that reflex patterns and facilitation technics can play important roles in muscle reeducation, but in order to put them into practical use a thorough knowledge of anatomy and physiology is essential.

Student, School of Physical Therapy, Mayo Clinic, Rochester, Minnesota.

REFERENCES

1. Bennett, R. L.: Principles of Therapeutic Exercise. In Therapeutic Exercise, by Sidney Licht; New Haven, Connecticut, Elizabeth Licht, Publisher, 1958, pp. 423-436.

Films of Interest

The following films were projected during the Film Theater at the 36th Annual Conference in Minneapolis.

DEADLINE 53 MINUTES—30 min., b/w, sd., 1958, United Cerebral Palsy Association, 321 West 44 Street, New York, N. Y., or other U.C.P.A. local affiliates. Dramatizes total effects of cerebral palsy; covers research, treatment, education, and job placement programs of U.C.P.A. Free

SPINAL COLUMN—STRUCTURE AND FUNCTION IN MAN—11 min., b/w, sd., 1956, The Pennsylvania State University, Audio Visual Aids Library, University Park, Pa., or Encyclopedia Britannica. Details of movements, structure, and function. Importance of good posture. Rental: $2.25

THE BRAIN AND BEHAVIOR—20 min., b/w, sd., 1958, New York University Film Library, 26 Washington Place, New York 3, N. Y. Results of stimulation by electrode, and behavior changes following injuries to different parts of the brain demonstrate connection between areas and specific types of behavior. Rental: $6.00

DEMONSTRATIONS IN HUMAN LEARNING—15 min., b/w, sd., 1957, The Pennsylvania State University, Audio Visual Aids Library, University Park, Pa. Gives examples of skills involving serial learning. Relate to examples from every-day life. Rental: $3.50

JUVENILE AMPUTEES CAN BE HABILITATED—12 min., b/w, sd., Department of Public Health, State of Georgia, Atlanta, Ga. Follows a quadruple amputee through the various phases of team approach in the habilitation of a juvenile amputee.

RESCUE BREATHING—25 min., b/w, sd., Nearest U.S. Army Film Library. Designed to teach technics of expired air inflation to all ages in groups of all types.

(Continued on page 568)

Schools Offering Courses in Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Schools offering the four year program leading to a baccalaureate degree accept high school graduates and transfer students. Schools offering the 12 to 16 months' program leading to a certificate accept students who have completed all or most of their undergraduate work providing they meet certain course requirements. Recipients of a degree and/or certificate have equal professional status. For specific information regarding each school's entrance requirements, curriculum, tuition and other fees, write to the physical therapy director indicated below. All students should investigate course requirements *early*.

	Degree	*Certificate*
CALIFORNIA		
Mary J. Dodge School of Physical Therapy Childrens Hospital Society 4614 Sunset Boulevard Los Angeles 27	‡	†
Ronald A. Hershey School of Physical Therapy College of Medical Evangelists Loma Linda	†	†
Lucille Daniels Division of Physical Therapy Stanford University Stanford (Palo Alto)	†	†
Margery L. Wagner Curriculum in Physical Therapy University of California The Medical Center San Francisco 22	†	†
Charlotte W. Anderson Department of Physical Therapy University of Southern California Los Angeles 7	†	†
COLORADO		
Dorothy Hoag Curriculum in Physical Therapy University of Colorado Medical School Denver 20	†	†
CONNECTICUT		
James M. Bauer Acting Director School of Physical Therapy U 101 University of Connecticut Storrs	†	
ILLINOIS		
Elizabeth C. Wood Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
IOWA		
Olive C. Farr Physical Therapy State University of Iowa Hospitals Iowa City		†
KANSAS		
Ruth G. Monteith Section of Physical Therapy Education University of Kansas Medical Center Kansas City 12	†	†
LOUISIANA		
(Not accepting students during 1958-1959) Director School of Physical Therapy Charity Hospital of Louisiana New Orleans 12		†
MARYLAND		
Gladys E. Wadsworth, Ph.D. Department of Physical Therapy School of Medicine University of Maryland Baltimore 1	†	
MASSACHUSETTS		
Adelaide L. McGarrett Physical Therapy Department Boston University Sargent College University Road Boston 15	†	†
Constance K. Greene Department of Physical Therapy *Bouvé-Boston School, Tufts University Medford 55	†	
Shirley M. Cogland *Program in Physical Therapy Simmons College-Children's Hospital 300 Longwood Avenue Boston 15	†	†
MICHIGAN		
Virginia Wilson Curriculum in Physical Therapy The University of Michigan University Hospital Ann Arbor	†	†
MINNESOTA		
Darrell D. Hunt School of Physical Therapy Mayo Clinic Rochester		†
Wilbur L. Moen Course in Physical Therapy University of Minnesota 860 Mayo Memorial Building Minneapolis 14	†	

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

	Degree	Certificate
MISSOURI		
Sr. M. Imelda, S.S.M. Department of Physical Therapy St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Beatrice F. Schulz Department of Physical Therapy Washington University School of Medicine 660 So. Kingshighway St. Louis 10	†	
NEW YORK		
Dorothy L. McLaughlin Albany Medical College Division of Physical Therapy Albany 8	‡	†
Mary E. Callahan Courses for Physical Therapists Columbia University College of Physicians & Surgeons 630 West 168th Street New York 32	†	†
Elizabeth C. Addoms Physical Therapy Curriculum School of Education, New York University Washington Square East New York 3	†	†
Mildred F. Heap Program in Physical Therapy University of Buffalo 3435 Main Street Buffalo 14	†	†
NORTH CAROLINA		
Helen Kaiser Division of Physical Therapy Box 3403, Duke University Medical Center Durham		†
Margaret L. Moore Section of Physical Therapy School of Medicine University of North Carolina Chapel Hill	†	
OHIO		
Robert D. Kruse, D.P.E. Course in Physical Therapy Frank E. Bunts Educational Institute 2020 East 93rd Street Cleveland 6		†
Gladys G. Woods School of Physical Therapy Ohio State University University Hospital Columbus	†	†

	Degree	Certificate
OKLAHOMA		
Thelma Pedersen School of Physical Therapy University of Oklahoma, Medical Center Oklahoma City 4	†	†
PENNSYLVANIA		
Dorothy E. Baethke Division of Physical Therapy University of Pennsylvania 3901 Pine Street Philadelphia 4	†	†
Kathryn Kelley Curriculum in Physical Therapy D. T. Watson School of Physiatrics Leetsdale	‡	†
PUERTO RICO		
(All classes given in Spanish) Lutgarda V. Piñeiro School of Physical & Occupational Therapy Candelaria & Mandry Streets Stop 22, Santurce	†	†
TEXAS		
Doris E. Porter Grady Vaughn School of Physical Therapy Baylor University Hospital Dallas 1	†	†
Cecelia J. Lee School of Physical Therapy Hermann Hospital Houston 25	‡	†
Ruby Decker School of Physical Therapy The University of Texas Medical Branch Galveston	†	†
VIRGINIA		
Susanne Hirt School of Physical Therapy Medical College of Virginia Richmond 19	†	
WISCONSIN		
Beth J. Phillips Curriculum in Physical Therapy Marquette University School of Medicine 561 North 15th Street Milwaukee 3	†	
Margaret Kohli Course in Physical Therapy University of Wisconsin Madison 6	†	
U. S. ARMY MEDICAL SERVICE		
*Physical Therapy Course Army Medical Service School Brooke Army Medical Center Fort Sam Houston, Texas Write to: The Surgeon General Department of the Army Washington 25, D. C. Att.: Personnel Division		†

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Physical Therapy for Motor Disorders Resulting from Brain Damage

Sarah Semans (Division of Physical Therapy, Stanford University, Stanford, California), REHABILITATION LITERATURE, 20: 99-111, April 1959

This original article was written especially for *Rehabilitation Literature*. It is an extensive review of some current physical therapy procedures in the treatment of the brain-damaged patient, and the neurophysiological bases of their use. It includes a long list of pertinent references.

Before describing specific technics and discussing their application, the author considers some basic concepts underlying normal and pathological motor function. These are: (1) the development and operation of the organism as a unitary reaction system; (2) the delicate balance between facilitatory and inhibitory influences necessary for normal function; and (3) the important role of sensation in the direction and control of movement and in motor learning. Each of these concepts is developed with many references to the various hypotheses of old and new investigators in this field.

The current methods used in physical therapy are grouped according to their general purpose: (1) to influence a specific muscle, muscle group, or joint action; (2) to influence a movement pattern; and (3) to influence the organism as a whole. Both facilitatory and inhibitory procedures are discussed. Again, the many hypotheses and upon which procedures are based are presented in some detail. The methods used under the third category directed toward the entire nervous system—are less clearly understood than the first two. The physical therapy procedures here attempt to apply present knowledge of the integrative function of the brain. Over-all, the methods discussed include those presented by Rood, Kabat and Knott, Perlstein, Phelps, Treanor, Bobath, Brunnstrom, Fay, and others.

Along with the various treatment procedures they have also developed various tests for evaluating the patient. These tests suggest or demonstrate the inadequacy of the standard muscle test for the evaluation of neuromuscular function in such patients.

The concluding paragraphs present the dilemma of the physical therapists who have been introduced to several "methods" and of the physicians when asked by the physical therapists, "Do you want Rood or Bobath technics used on this patient?" The answer may be summed up by calling for increased understanding by the physical therapist of the underlying factors of the patient's problem and of the possible influence of available treatment procedures. The hypotheses upon which these various approaches to treatment are based should be critically and experimentally examined, and neither blindly accepted nor chosen on the basis of mental or emotional bias.

Electromyography of Iliopsoas

John V. Gasmajian (Department of Anatomy, Queens University, Kingston, Ontario, Canada), ANAT. REC. 132: 127-132, October 1958

That the iliopsoas is a hip flexor is the only function agreed upon by all authorities according to the author. There is confusing disagreement about the other influences produced by the muscle. Some anatomy books claim it medially rotates the hip slightly, while others state that medical rotation of the hip is due mainly to the "powerful pull of iliopsoas." Others hold out for medial rotation when the hip is extended and lateral rotation when the hip is flexed.

The author feels that almost everyone has lost sight of the principle that a muscle so close to a joint must have an important postural or stabilizing function. Because the conjectural methods have not produced a clear-cut answer, this electromyographic study was undertaken.

The subjects of the investigation were four young men. Concentric needle electrodes were inserted into the iliacus at a depth of 2 inches just medial to the anterior superior iliac spine. The action potentials were suitably amplified and the cathode ray oscilloscope photographed.

The following results were recorded: 1. All degrees of hip flexion produced action potentials. 2. During standing there was a continuous slight to moderate level of activity. 3. No activity was recorded while subjects were reclining or sitting at ease. 4. Slight activity was produced during medial and lateral rotation whether the hip was flexed or extended.

The author concludes that the iliopsoas is an active postural or stabilizing muscle as well as a hip flexor and that the controversy as to whether it is a medial or lateral rotator should be abandoned because in fact it is neither one nor the other.

Anticoagulants for Occlusive Cerebrovascular Lesions

E. F. Vastola and A. Frough (State University of New York College of Medicine, Brooklyn), NEUROLOGY, 9: 143-148, March 1959

There is little clear-cut evidence of how anticoagulant therapy affects recent occlusive cerebrovascular lesions. The authors' purpose in conducting this study was to help in answering three questions:

1. Can anticoagulan therapy stop or reverse a recent neurologic deficit?
2. Does an elevated prothrombin time cause regression of a severe neurologic deficit?
3. Is there risk of hemorrhage into the infarcted brain during anticoagulant therapy?

Fifty-five patients participated in the study, 41 males, and 14 females. Their average age was 67.6 years. All had the presumptive diagnosis of recent occlusive cerebrovascular lesion. No patient was more than slightly hypertensive and in all, a lumbar puncture prior to therapy revealed no evidence of hemorrhage. They were divided into two groups—group A, 30 patients with hemiparesis, and group B, 25 patients with solid hemiplegia.

Anticoagulant therapy was begun within 6 to 12 hours after onset. Thereafter an anticoagulant was given daily to maintain prothrombin levels of 2 to 2.5 times that of normal. This treatment was continued 1 to 4 weeks, with an average duration of 2 weeks.

At the end of 4 to 8 weeks 73 per cent of group A and 24 per cent of group B showed improvement. These figures do not differ remarkably with the percentage of improvement expected in any group of patients with similar lesions who have received only supportive therapy.

Sixteen patients; 6 in group A, and 10 in group B, showed regression with increasing coma and death. Four of these deaths were attributed to brain hemorrhage occurring when the prothrombin time was at therapeutic level.

Thirty-six per cent of the entire group showed evidence of bleeding in some part of the body while the

prothrombin was in therapeutic range. The authors concluded that, under the conditions described, the risk of hemorrhage into the brain appears to contraindicate the use of anticoagulants in the treatment of cerebrovascular lesions.

A Surface Analgesic in Treatment of Musculoskeletal Affections

Edward E. Gordon and Albert Haas (Director of the Department of Physical Medicine, Michael Reese Hospital, Chicago), INDUST. MED. 28: 217-220, May 1959

It is known that fatty substances can be absorbed percutaneously, especially with rubbing. A study was conducted on 41 patients to test the hypothesis that a fat-soluble analgesic penetrating to the sensory endings relieves pain of musculoskeletal origin or of a referred type.

A course of ineffective physical therapy which included standard massage was followed by sessions of massage with a topical analgesic and exercise. The mixture used contained certain organic oils, 30 per cent methylsalicylate, and a fat-soluble analgesic. Among the various conditions treated were: osteoarthritis, rheumatoid arthritis, "low back syndrome," fibromyositis, and phantom pain. Eleven of these were acute conditions and 30 were chronic.

Several case reports illustrate the effectiveness of the topical analgesic; for example, one patient had a frozen shoulder, secondary to cervical rib on the left side, with pain in the neck and upper thoracic region. Shoulder motion was 50 degrees abduction, 50 degrees flexion, and 10 degrees of external and internal rotation. Radiant heat, massage, and passive exercises were administered for six weeks without relief of pain or improved motion. Exercises were limited because of pain. The topical analgesic was then applied during massage and pain was relieved for two hours so that exercises could be tolerated. When a placebo similar to the true analgesic medium was substituted for one week, without the patient's knowledge, there was no relief of pain. After three months of topical analgesic preceding exercises shoulder motion was increased as follows: 120 degrees abduction, 130 degrees flexion, 50 degrees external rotation, and 30 degrees internal rotation. Pain in the neck and upper back remained, but pain in the shoulder was temporarily relieved.

Satisfactory results were obtained in 85 per cent of the cases treated. A majority of the patients with chronic conditions received temporary relief, and all those with acute symptoms showed relief of pain and improvement of function in 2 to 14 days. Dermatitis or other side effects were not noted in a single case.

There was no relief of pain following the use of a placebo, even though the placebo contained methylsalicylate commonly found in linaments. This substantiated the opinion that the preparation used in the study was an effective analgesic.

Fatigue Fracture of the Pelvis and the Lower Extremity

C. C. Wang, C. W. Lowrey and R. L. Severance, N. ENGLAND J. M., 260: 958-962, May 7, 1959

Fatigue fracture or march fracture is a condition that was initially recorded in 1855 but interest was not quickened until the early 1940's. From December 1955 to May 1958 a study was done at the U. S. Army Hospital, Fort Chaffee, Arkansas, on 97 fatigue fractures of the pelvis and lower extremity in 83 patients ranging in age from 18 to 25 years.

Of the 97 fractures, 75 were in the metatarsal bone (95 per cent occurred in the second and third metatarsal), 6 in the os calcis, 8 in the tibia, 4 in the femur, and 4 in the pelvis.

Fatigue fractures occurred in recruits four to five weeks after the beginning of basic military training and were most frequent during the midwinter season, when heavier clothing was worn. There was no history of acute trauma but the subjects complained of a constant, dull, aching pain that was relieved by nonweight bearing. Point tenderness at the fracture site was elicited and edema was frequently observed. Fatigue fracture sites occurred more often in the distal third of the shaft of the femur while in the tibia the fracture site was in the upper third of the shaft. Observations of fatigue fractures by Singer and Maudsley, on persons of middle and advanced age, disclosed fracture sites of the tibia to be in the lower third of the shaft.

Radiographic finding may not be sufficiently developed to reveal early fatigue fractures. Thus, it is extremely important to reexamine the patient two to three weeks after the initial examination if a fatigue fracture is strongly considered.

Conservative treatment was usually sufficient for complete recovery. This treatment consisted of complete bed rest for 10 days, followed by gradual ambulation. On uncomplicated cases no plaster immobilization was required.

Total Cervical-Spine Fusion for Neck Paralysis

Jacquelin Perry and Vernon L. Nickel (Rancho Los Amigos Hospital, Downey, California) J. BONE SURG., AM. VOL., 41-A: 37-60, January 1959

Although until recently severe paralysis of cervical muscles with residual instability of the head has stimulated only sporadic concern, today the number of such patients has reached impressive proportions as a result of the dramatic increase in the survival rate of poliomyelitis patients, the streamlining of respiratory aids to allow patients to be upright and active, and the frequency with which involvement of the neck muscles accompanies respiratory impairment. There is a significantly large group of patients with severe residual paralysis of the cervical muscles who have regained considerable use of their extremities and now need a stable head and neck for maximum activity.

An organized study of this problem was initiated at the Rancho Los Amigos Poliomyelitis Respiratory Center. Consideration was also given to the close relationship between the position of the head and efficient function of the pharynx. The purpose of this paper is to present the results of this study of function of the neck muscles as well as criteria for the diagnosis and management of the problems of both instability and malposition of the head.

In their review of the anatomy of the neck muscles, the authors emphasize that the common broad grouping of the cervical muscles into flexors and extensors must be further subdivided because control of the head is separate from that of the cervical spine. They therefore designate as *capital* flexors and extensors all muscles inserted on the skull and acting on the head through the subcccipital and atlanto-axial joints. They limit the term *cervical* flexors and extensors to the muscles which act only on the cervical spine, with motion centered in the lower cervical spine. Individual evaluation of the four functional groups is necessary for effective management of nuchal paralysis.

Following a detailed analysis of the problems of head stability resulting from varying involvement, the disabilities arising therefrom, and the compensatory mechanisms adopted by patients, the authors discuss bulbar muscle function and the relationship between weakness of cervical muscles and the problems arising from partial bulbar paralysis. Next, the management of these patients is discussed from the point of view, first, of prevention of deformity and second, of providing adequate stability and control of position so that the patient may attain his maximum functional potential.

This second objective has been approached in two directions: (1) bracing, and (2) the use of various surgical technics.

In the opinion of the authors, surgery provides the most effective means of restoring stability and proper positioning of the head. Three types of surgery are discussed: total muscle transfer, fascial transplantation, and cervical spine fusion. Three cases are presented to illustrate the many points discussed in the paper. Results of 22 cervical spine fusions performed in the past two years are reported. No medical complications have arisen with any of these patients; this is attributed by the authors to the liberal use of respiratory aid during the postoperative period, judicious replacement of blood lost during surgery, and protection by halo traction during surgery.

The following six points were emphasized:

1. The neck muscles form four functional groups: flexors and extensors of the head, and flexors and extensors of the neck.
2. Paralysis of the neck muscles may prevent the patient's taking advantage of the function present in his extremities.
3. Paralysis of capital extensors may greatly embarrass or completely prevent swallowing and speech by allowing the head to fall into extreme flexion.
4. Total cervical-spine fusion is an effective way of replacing the stability essential for general activity and this fusion must include the occiput if the capital extensors are weak.
5. The halo traction apparatus is a successful means of stabilizing the head and neck for fusion in a predetermined position.
6. With the use of mechanical respirator assistance, the presence of respiratory paralysis is no longer a deterrent to safe major reconstructive surgery.

Gunther's Accommodation Index

Jorge Weibel (Department of Neurology, Baylor University College of Medicine. Houston, Texas), DIS. NERV. SYST., 20: 103-110, March 1959

The author is from Chile, where experiments have been conducted to evaluate the practical importance of the Gunther's Accommodation Index (G.A.I.) in both diagnosis and prognosis of the neuromuscular disease.

In this study, an instrument was used which generated two types of exponential ascension currents which are designated E_2 and E_3. The E_2 reaches its maximum voltage at 20 milliseconds, while E_3 obtains its highest voltage at 50 milliseconds. The stimulator is calibrated according to the effective voltage of the charge condenser, which discharges through a net of condensers of specific capacity and generates two types of exponential current. This calibration permits the determination of the relative threshold of the excitable tissue to the two exponential currents. The threshold to E_2 and E_3 is determined.

The $\frac{E_2}{E_3}$ coefficient is an index of accommodation of the nerve or muscle studied. If $\frac{E_2}{E_3}$ is 1.0, accommodation is practically absent, a finding observed in nerve-muscle preparation with complete Wallerian degeneration. Values less than 1.25 and higher than 1.0 have been observed in partial nerve degeneration. The neuromuscular systems under normal conditions consistently show values higher than 1.25.

Of 191 cases of peripheral nerve paralysis studied, 165 recovered. Patients were grouped on the basis of exploration of the accommodation index as determined directly on the muscles, with or without loss of excitability through the nerve.

Group A. These patients showed diminution of the muscular G.A.I. and loss of excitability through the nerve.

Sub-Group A-1 had complete recovery of paralysis. The G.A.I. never reached 1.0 and increased with recovery to normal value.

Sub-Group A-2 did not regain voluntary motion. The G.A.I. decreased to 1.0 and remained there.

Group B. Patients showed diminution of the G.A.I. of the muscle without loss of nerve excitability. There was recovery of voluntary motion in two months.

Group C. In these patients the G.A.I. showed normal values both in the muscles and the nerve during the entire course of paralysis. There was recovery of voluntary motion in 20 days.

The author feels the test is of significant value in both diagnosis and prognosis of peripheral nerve lesions.

Reflex Sympathetic Dystrophy: Treatment by Syncardial Compression

Henryk Domb and Amnon Fried (50 IBN Gabirol St., Tel Aviv, Israel), ANGIOLOGY, 10: 109-114, April 1959

The authors report on 12 patients with a diagnosis of reflex sympathetic dystrophy treated with the Syncardon. After the diagnosis was established, all other forms of treatment were discontinued and treatments with the Syncardon were started. The treatments were given three times a week for 15 minutes. The air cuff of the Syncardon apparatus was placed directly on the painful part of the limb and pressures of 35-40 mm. Hg. were used.

The first relief from symptoms occurred during the second week of treatment. After six or seven weeks of treatment, all symptoms disappeared. Vascular tests and X-ray studies showed return to normal findings but at a slower rate than the symptomatic relief.

The authors state that treatment with Syncardon apparatus seems to be superior to any other therapy known at present for the treatment of reflex sympathetic dystrophy.

Clinical Method of Assessing Tonus and Voluntary Movement in Hemiplegia

J. Brewster Brennan (Department of Physical Medicine, St. James Hospital, London), BRIT. M. J., 5124: 767-768, March 21, 1959

The author suggests a method of clinical examination for hemiplegic patients which evolves from the need for an accurate assessment of the response of these patients to treatment with spasmolytic drugs.

Factors which influence tonus and activity in skeletal muscle were standardized for the testing situations. These factors included room temperature, emotion, attitudinal reflexes, flexion and extension syner-

gies, volition, and rate of passive movement.

The examination included measurement of the change of intensity of tonus and measurement of voluntary movement. Change of intensity of tonus was evaluated by three measurements: the range of normal tonus with passive motion, the degree of resistance for the remainder of the arc, and the postural position of the upper limb. Volutary movement was assessed by measuring range and strength. Separate grades for strength were given for different arcs of the range.

The author thought this method capable of providing accurate information regarding changes in the patient, whether spontaneous or in response to treatment.

The Phasic Activity of the Muscles of the Lower Extremity and the Effect of Tendon Transfer

J. R. Close and F. N. Todd (Oakland, California), J. BONE SURG. 41-A: 189-208, March 1959

The basic associations of muscular contraction with the stance and swing phases of walking, as described by Scherb and other investigators, are also found, to a large extent, in persons with lower extremity involvement following poliomyelitis. When tendon transfer in the lower extremity is contemplated, the question often arises whether one can violate the patterns of phasic behavior and expect a functional transfer. Furthermore, if transfers are done within the boundaries of phasic groupings, will these muscles retain their desirable preoperative phasic activity?

Using a sound motion-picture camera, in conjunction with a cathode ray oscilloscope, the authors studied 125 muscles (in 85 patients with paralytic involvement of the lower extremity) in which tendon transfer had been done. The muscles of several normal persons were studied also. Dual wire internal electrodes were used; the position of the electrodes was verified by stimulation. The tests yielded the following information: (1) the phasic activity of the muscle for repeated walking cycles, (2) the duration of each muscle contracting, and (3) the electrical intensity or population of motor unit activity.

According to the authors, phasic transfers, such as extensor transfers to the dorsum of the foot, usually retain their preoperative phasic activity, appearing to regain this in as short a time as seven or eight weeks. In general, nonphasic transfers, such as tibialis anterior to heel, demonstrated a strong tendency to retain their preoperative patterns of phasic activity, failing to make the conversion to the phase of the muscle for which they were substituted. Among the nonphasic transfers, however, conversion was demonstrated in a number of instances.

The authors stress the value of an understanding of the phasic activity of normal muscles as a basis for planning tendon transfer procedures. They concluded that the phasic transfer, in general, is superior to the nonphasic. Results of phasic transfer are predictable; in some instances, nonphasic transfers can undergo phasic conversion.

It is suggested that certain cases of prompt, spontaneous phasic conversion may be attributed to the use of ancestral pathways once used in forebears where the muscle had the function of the transfer in its new position.

Functional Fashions for the Physically Handicapped

Howard A. Rusk (Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, New York, New York), N. Y. STATE J. M., 59: 1859-1861, May 1, 1959

The Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, and Clothing Research Inc. is sponsoring a project to provide specially designed clothing for persons with physical disabilities.

Research has shown that clothing problems of physically handicapped persons center around:

1. Design to permit greater ease in putting on and removing garments by the handicapped person;
2. Design to permit greater social acceptance and increased self-esteem by the severely disabled;
3. Fabric choice to resist undue wear and tear caused by greater tension on the cloth as a result of strenuous physical activities, undue wear caused by braces and other appliances and devices, and laundering and related care of clothing.

Recently two press showings were held in New York of 17 models that had been designed for the handicapped. Currently six of the items have been produced by a new, nonprofit organization, Clothing Research Inc., which is conducting market tests through the direct mail selling of these items. Catalogs of the six items now available can be secured from Clothing Research Inc., 307 West 38th Street, New York, New York.

If the current market test being conducted indicates a sufficient demand, additional garments will be produced as the designs become available. Garments now available include a coat-dress, suit-dress, slacks, a belt-pocket unit, and a wheel chair cape.

A Practical Effective Treatment for Surface Ulcers in Institutional Practice

Oscak K. Diamond (Creedmoor State Hospital, Queens Village, New York), N. Y. STATE J. M., 59: 1792-1794, May 1, 1959

Surface ulcers among institutional patients seriously interfere with the primary condition for which patients are hospitalized. An effective program for the prevention and treatment of surface ulcers is of utmost importance for any institution whose objectives include successful rehabilitation of its patients.

Protection of the ulcer from pressure and contamination is essential. Maintenance of a good nutritional status is also important. The local treatment recommended is based on the principle that necrotic tissue must first be removed and subsequent granulation aided by a medication designed to support the physiologic healing processes.

A regimen of local treatment is described which over a two year period produced excellent results in the treatment of decubitus, varicose, arteriosclerotic, and diabetic ulcers. The agent employed initially is an enzymatic debriding agent, papain-urea-chlorophyllin ointment (Panafil). This ointment removes necrotic tissue and debris and produces a clean granulating base. From this stage to ultimate healing, chlorophyllin ointment (Chloresium) is used to promote granulation and epithelization. Minimally trained personnel can carry out the treatment since both preparations are topically applied under standard dressings and require no special precautions.

Although the length of time required for treatment varies, healing of most decubitus ulcers is expected in six weeks and healing of varicose ulcers of approximately "quarter" size within three weeks.

The Relation between the Number of Impulses and the Integrated Electric Activity in Electromyogram

R. M. Bergström (Helsinki, Finland), ACTA PHYSIOL. SCAND., 45: 97-101, 1959

In order to evaluate electrical parameters of gross response electromyograms, the interrelationships between the integrated electric activity and the number of motor impulses of the myograms obtained from human forefinger abductor muscle in voluntary, nonisometric contractions was studied. The integrated activity was determined by planimetry. The number of motor impulses were counted, irrespective of location and size. The relationship between the integrated activity and the number of motor impulses was found to be linear in contractions up to a spike frequency of 500 cps. It was concluded that, as far as small muscles are concerned, counting of the motor impulses in the electromyogram, recorded with nonselective electrodes, can be used in estimating the electrical activity of the whole muscle. (Author's abstract.)

The Physiology of Micturition

Reed M. Nesbit and Jack Lapides (Department of Surgery, Section of Urology, The University of Michigan Medical School, Ann Arbor, Michigan) J. MICHIGAN M. SOC., 58: 384-388, March 1959

Micturition in the normal person is a simple coordinated, voluntary process which expels urine intermittently from the body. The structures primarily involved in urination are the bladder, the urethra, and the nervous system. The striated muscles of the abdomen, diaphragm, and pelvis play a secondary, accessory part and are not necessary for the initiation, maintenance, or inhibition of urination.

The primary structures necessary for the initiation, maintenance, and inhibition of urination are the bladder fundus, the bladder neck (synonymous with posterior urethra or internal vesical sphincter), and the nervous system. Basic tonicity, an intrinsic property of bladder smooth muscle, is responsible for the maintenance of urinary continence. Voluntary control of urination is exerted through the cortico-regulatory tracts (from the higher centers) upon the motor neurons of the bladder—a direct cortical control over smooth muscle. The motor nerves extending to the bladder are parasympathetic in origin.

The sympathetic nervous system has no demonstrated function in micturition. Some of the striated muscles of the body may play a secondary, supporting role. The external urethral sphincter is necessary for sudden interruption of urination, and for maintenance of continence in the male, when the vesical neck (internal vesical sphincter) has been incapacitated.

Polyurethane Polymer—Its Use in Fractured and Diseased Bones

M. P. Mandarino and J. E. Salvatore (Hahnemann Medical College and Hospital, Philadelphia), AM. J. SURG., 97: 442-446, April 1959

The authors report the use of polyurethane polymer, a plastic material for fixation of bone in 6 patients. These include 1 acute fracture of the tibia, 3 nonunions (2 of tibia, 1 supracondylar femoral) and 2 pathologic fractures of the femur.

At the time of surgery, the polymer is mixed with a catalyst producing a sponge-like compound which chemically bonds to the surfaces to be held, bridged, filled, or strengthened and becomes an intimate part of the bone. Sufficient fixation for wound closing occurs in 20 to 30 minutes. After 24 to 48 hours "curing" time, the stability of the area is such that weight bearing may be initiated.

The authors report no evidence of toxicity in the cases studied to date.

Clinicopathologic Correlations in Spondylosis.

G. Robert Nugent (Department of Neurosurgery, Duke University Medical Center, Durham, N. C.), NEUROLOGY, 9: 273-281, April 1959.

The problem of cervical spondylosis has been reviewed from many aspects, particularly that of pathogenesis. From the evidence available, this seems to be a complex situation in which numerous interrelated factors are involved.

Whether symptoms arise from this chronic degenerative process of the cervical vertebrae and intervertebral disks depends on the width of the sagittal diameter of the cervical spinal canal; physical size of the attachment of the denticulate ligaments; presences of root-sleeve fibrosis, intradural adhesions, and associated vascular insufficiency of the cervical spinal cord.

The role of the ligamentum flava in compounding the disorder of the spinal canal is stressed with special reference to hyperextension injuries of the cervical spine.

The work of Taylor on cadavers is confirmed in living subjects.

The clinical roentgenographic and surgical implications of these problems are discussed and an attempt made to answer some of the questions raised by this interesting disease.

Abstracters for August

For the carefully prepared abstracts in this issue, the Editorial Board is indebted to the following Association members:

Rachel Adams	Dorothy Iddings
Ethel Cor[illegible]r	Estill V. Latimer
Jea[illegible]	Geraldine Midgley
[illegible]	Mir[illegible]m Partridge
[illegible]	[illegible] L. Strong

[illegible]ry keen, observ- an extraordinary amount of curiosity. He asked his patients all sorts of questions about their families, their habits and their symptoms and made notes on the progress of their illnesses. He was the father of medical histories on records of patients and, unlike many of his immediate, (or even later) followers in the art of healing, he recorded failures as well as successes. Many of Hippocrates medical records contain descriptions of disease so accurate and so exact that we have no difficulty in making a diagnosis from his account. Hippocrates knew that patients who had fluid and air in their chests gave a splashing sound when they were shaken vigorously; he noted that patients with diseases of the chest often had clubbed fingers resembling drumsticks.

—*Journal of the International College of Surgeons*, January, 1959.

Book Reviews . . . . .

A Primer of Cerebral Palsy. *By Joseph D. Russ, M.D., Assistant Professor of Pediatrics, Tulane University School of Medicine; Senior Pediatrician, Touro Infirmary, and Medical Director, Cerebral Palsy Center of Greater New Orleans. And Hyman R. Soboloff, M.D., Assistant Professor of Orthopedics, Tulane University School of Medicine; and Medical Director, Louisiana State Cerebral Palsy Center. Edited by John A. Anderson, M.D., Professor and Head, Department of Pediatrics, School of Medicine, University of Minnesota. Paper; price $4.00. Pp. 77; illus. Charles C Thomas, Springfield, Ill., 1958.*

This monograph, one of the American Lectures in Pediatrics Series, is a rather elementary and benign survey of the problem of cerebral palsy. This general approach is a deliberate attempt by the authors to foster a ". . . . common understanding of the basic elements, problems, and terms, referable to cerebral palsy. . . ." among all persons interested in or concerned with this problem. As with most "primers," persons with some knowledge of the topic may find it to be superficial. Conversely, those who are just embarking on a study of cerebral palsy will find this text to be a rather all-inclusive and realistic overview of the problem.

As one comes to expect from medically orientated publications concerned with cerebral palsy, there are the usual chapters headed Classifications, Etiology, Diagnosis, The Cerebral Palsy Team, Therapy, and Prognosis. However, this monograph is unique in that the authors give essentially equal consideration to Psychometric Evaluation, Special Education and other factors often considered to be nonmedical in nature. Although the purpose of this text confined the writers to a rather superficial treatment of material, Dr. Russ and Dr. Soboloff demonstrate an understanding of all the major ramifications of the management of cerebral palsy. This is especially true of the chapter headed Special Education in which the authors present concepts that are basic for realistic educational planning for the cerebral palsied.

A Primer of Cerebral Palsy can be recommended as perhaps the only brief and uncomplicated text providing an introductory survey of the problem of cerebral palsy that is suitable for the beginning student.

The Central Nervous System and Behavior. *Transactions of the First Conference, Josiah Macy, Jr. Foundation and National Science Foundation. February 23-26, 1958. Edited by Mary Brazier, Ph.D., Neurophysiological Laboratory, Massachusetts General Hospital, Boston. Cloth; price $5.25; Pp. 450; illus. Josiah Macy, Jr. Foundation, New York, 1959.*

The Conference, whose transactions this book reports, was the first of a series sponsored by the Josiah Macy, Jr. Foundation as part of an over-all program whose goal is the promotion of communication, the exchange of ideas, and the stimulation of creativity among the participants. Each conference meeting is limited to 25 members and guests, selected to represent a multidisciplined approach to some urgent problem in the field of medicine and health.

One of the purposes of this First Conference on The Central Nervous System and Behavior, suggested by the National Science Foundation, was to familiarize western scientists with Russian work in the field. The conference, therefore, opened with a brief history of the rise of science in Russia and an extensive pictorial survey of its development with emphasis on workers in neurophysiology and behavior. There are 107 full page plates which include photographs and drawings of noted scientists, patrons, teachers, and laboratories, as well as diagrams and photographs of some of Pavlov's famous experiments on conditional behavior in dogs. Each plate is accompanied by an excellent explanatory note.

There follow edited transcripts of Conference sessions on the Nineteenth Century Background of Russian Neurophysiologists; the contributions of Sechenov, his successors Danilevsky and Wedenski, and Wedenski's pupil Ukhtomsky; the work of Pavlov and his contemporary, the lesser known but nonetheless influential, Bechterev; and finally on post-Pavlovian developments. After a summation of the Russian methodologies and concepts, the conference proceeded to a discussion of current research in the United States. This ranged over work done on brain stimulation and conditional reflexes, EEG and conditioned learning, and electrical correlates of conditioned learning. Research in these areas has already brought us closer to an understanding of the physiological processes involved in learning.

The proceedings of the conference are reported essentially as they occurred and include side remarks, questions and comments which at first tend to interrupt the reader's sequence of thought. However, as the style of the text becomes more familiar, these previously distracting inclusions begin to add to, rather than detract from, the interest of the subject matter. The members of the conference begin to emerge as personalities with widely varying philosophies and methodologies, whose concepts and approach to the problem are sometimes diametrically opposed. This personal glimpse of the conference becomes most appealing.

The section of the book devoted primarily to the contributions of Russian scientists is of general interest. The later section, concerning current research by western scientists, requires more extensive background knowledge for adequate understanding and appreciation.

The book will be of particular interest to graduate students of neurophysiology. The average reader will find it of interest primarily for the excellent historical résumé of Russian contributions leading up to Pavlov and his classic experiments on conditional responses.

Outline of Fractures Including Joint Injuries. *By John Crawford Adams, M.D. (London) F.R.C.S. (England), Consultant Orthopaedic Surgeon, St. Mary's Hospital, London, and St. Vincent's Orthopaedic Hospital; Assistant Editor, Journal* of Bone and Joint Surgery. *Ed. 2. Cloth; price 86.50. Pp. 268; illus. Williams and Wilkins, Baltimore, U.S. Agents, and E. & S. Livingstone Ltd., Edinburgh, London, 1958.*

This is an excellent book. The author clearly states in his preface that it is intended primarily for the medical student, general practitioner, and physical therapist, and he remains consistently within these limits. He has taken a large subject and condensed it quite effectively into an interesting and most informative textbook.

The volume is divided into an introduction, six chapters devoted in turn to general features of fractures, principles of fracture treatment, joint injuries, injuries of the spine and thorax, injuries of the upper extremities and injuries of the lower extremity, followed by an index. The

book is liberally illustrated with clear line drawings, well selected pictures, and sharp reproductions of radiographs. Each illustration supplements the text in a smooth fashion and generally occurs on the same page as the subject under discussion, a welcome feature in a medical text. The type is large and comfortable to read. The outline chosen by the author is simple, and does not become encumbered with needless detail.

This reviewer thoroughly enjoyed all elements of this book, and found it an excellent refresher. It is recommended in its entirety for all physical therapy students as being one of the clearest and most concise outlines yet seen on the subject of fractures. It is all encompassing, including limited but adequate consideration of the importance of so-called "rehabilitation measures." Some of the terminology is characteristically British, but not so far removed from the American as to be misunderstood. The graduate physical therapist will also find much of value, particularly in dealing with students, as well as in review.

Clinical Orthopedics: Vol. 12: Rehabilitation. *Edited by Anthony DePalma, M.D., Editor-in-Chief, and contributing authors. Cloth; $7.50. Pp. 327; illus. J. B. Lippincott, Philadelphia, 1959.*

The twelfth issue of *Clinical Orthopaedics* is composed of a symposium of articles on the various aspects of rehabilitation and a section of articles on general orthopedics. The section dealing with rehabilitation composes about one half of the book and is written for the most part by men who are outstanding in their respective fields. Included in this section are articles by Earl D. McBride, R. L. Bennett, Henry H. Kessler and John McM. Mennell. The subjects discussed cover a wide range encompassing disability evaluation, rehabilitation of the polio patient, the hemiplegic, the arthritic, and the amputee. Although most of these articles are reviews of their respective subjects in varying degrees of detail there are one or two having to do with clinical and experimental research which are quite interesting from the standpoint of physical therapy as well as orthopedics.

As in any collection of articles on a given subject there will always be subjects discussed which are controversial and thought provoking. This volume is no exception. For example Mennell's discussion of the use and abuse of physical therapy and his advice to the orthopedists concerning their training in this field will certainly arouse mixed feelings within the orthopedic profession. Also, a concluding statement such as "the electromyogram is to the neuromuscular system, what the roentgenogram is to the osseous system" as made by Dr. Furey in his discussion of the use of this apparatus in the diagnosis of shoulder disorders expresses considerable enthusiasm for an expensive piece of equipment which offers only marginal information beyond that furnished by a careful physical examination.

The section of the book written about general orthopedic subjects includes an excellent article on fat embolism and several articles dealing with problems about the hip.

As in previous issues of *Clinical Orthopaedics* the subjects chosen, organization of material, illustrations and format are of a high quality.

The material presented in the first section, I would think, would be of interest to all people concerned with the problems of physical medicine in the same respect as would any periodical covering current aspects of this subject.

Convulsive Disorders of Children. *By Dora Hsi-Chih Chao, M.D., Physician and Assistant Director, Blue Bird Clinic, Methodist Hospital, and Assistant Professor of Pediatrics and Neurology, Baylor University College of Medicine, Houston; Ralph Druckman, M.D., Neurologist, Blue Bird Clinic, Methodist Hospital, and Assistant Professor, Departments of Neurology and Physiology, Baylor University College of Medicine; and Peter Kellaway, Ph.D., Director, Blue Bird Clinic, Methodist Hospital, and Associate Professor, Department of Physiology, Baylor University College of Medicine. Cloth; price $6.00. Pp. 151; illus. W. B. Saunders, Philadelphia, 1958.*

This is an excellent, concise, highly pertinent dissertation on epilepsy in childhood. The data is compiled from the authors' personal experience. They have added a carefully selected relevant bibliography. The chapter on electroencephalography is particularly noteworthy.

The text is recommended for all persons interested in the diagnosis and management of convulsive disorders in childhood.

The reviews published here do not necessarily represent the opinions of the American Physical Therapy Association.

Book Reviewers for August

Miriam L. Bender, Major, (MSpC) USAF, Chief Physical Therapy Section, USAF Hospital Eglin, Eglin Air Force Base, Florida.

Richard B. Gresham, Lt., Medical Corps, U. S. Navy.

Jean Holowach, M.D., Associate Professor of Pediatrics, Washington University School of Medicine, St. Louis.

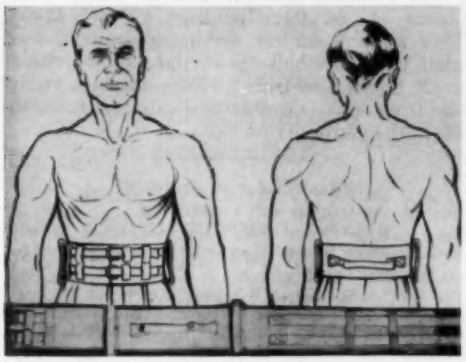
George R. Miller, M.D., Associate Surgeon, North Carolina Orthopedic Hospital, Gastonia.

Edward N. Norris, Associate Professor, Department of Health and Education, State Teacher's College, West Chester, Pa.

Frederick E. Vultee, M.D., Associate Director, Rehabilitation Institute of Chicago.

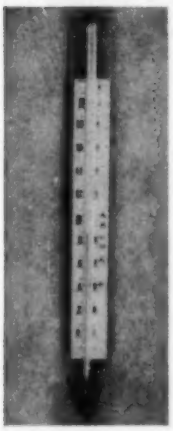
What's New .....

80. Walking Belt



Nylon Walking Belt is designed to provide an ideal method of assisting weak or frail patients. May be used in hydrotherapy "walk-in" tanks or swimming pools. The belt is made of durable white nylon . . . it is washable and has rust-proof buckles. The belt is 4 inches wide and is available in two sizes. The regular size adjusts from 28 inches to 43 inches and the child's size adjusts from 18 inches to 28 inches. The two vertical "holding" handles and one horizontal handle permit the therapist to assist the patient from any direction. Elgin Exercise Appliance Company.

81. Bath Thermometer



The Bath Thermometer, encased in a cigar-shaped sealed glass tube with super-sensitive material, registers instantly. It is graduated from −10° to +220°F. The scale in large black numbers against a yellow background has six special markings, in vivid red color; "A," level, Hot Bath (105°); "B," Warm Bath; "C," Tepid Bath; "D," Temperate Bath; "E," Cool Bath; and "F," Cold Bath (45°). It floats on the water, and is equipped with a removable plastic clip for attaching to whirlpool bath tanks, baby bath basins, or other containers. Self Ease Units, Inc.

For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

New items which may be of interest to physical therapists will be mentioned in these pages each month. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review.*

82. "Walk-O-Pedic"

"Walk-O-Pedic," first invalid walker with an automatic safety brake is instant and automatic. Only a slight additional pressure on the handle bar is needed to activate the safety brake if the patient stumbles, loses his balance or when he wants to rest. Braking is provided by forcing two heavy, rubber-tipped supports directly against the floor, thus actually giving the braked "Walk-O-Pedic" the stability of a parallel bar.

The "Walk-O-Pedic" can be easily folded and adult, junior, and infant sizes are available. A foldable seat, attachable crutches, and equipment for attaching wheel chairs are among the accessories available. Sundberg Instruments.

(continued on next page)

83. Waterproof "Bloomers"

Soft, pliable, waterproof plastic (or latex) "bloomers" provide cool, sanitary comfort, and are easily sponged clean for odor-free use. In addition, waterproof elastic waist and leg bands provide secure closure without discomfort, even when worn for indefinite periods.

The bloomers are available in snowy white plastic (model 99); or latex (model 4199). They are full cut for maximum comfort, even when worn over bulky protective clothing. Sizes: small (waist size from 24-28); medium (waist size from 30-36); and large (waist size from 38-44). The Akron Truss Co.

(Continued from page 557)

MOUTH TO MOUTH BREATHING—10 min., b/w, sd., Nearest U. S. Army Film Library. Filmed at time actual research studies in resuscitation were in progress.

NO MARGIN FOR ERROR—30 min., b/w, sd., 1959, The William S. Merrell Company, Cincinnati 15, Ohio, Free; American Hospital Association, 840 North Lakeshore Drive, Chicago 11, Ill.; American Medical Association, 535 North Dearborn Street, Chicago 10, Ill. Free. Presents cause and effect of human mistakes in the complex system of the modern hospital and points the way for active cooperation between medical and administrative staffs of the hospital.

NOTE: Requests for use of films must be sent directly to individual distributor. Films are *not* available from the National Office.

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Illustrations

Your Emblem

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New use of blue and gold makes this emblem more effective.

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New lightweight pin is more attractive.

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37th
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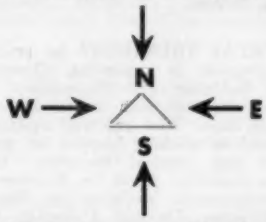
American
Physical Therapy
Association
June 26 – July 1, 1960
Penn-Sheraton Hotel
Pittsburgh, Pennsylvania



1960 Points to Pittsburgh

List of Advertisers

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Positions Available

Opening for TWO REGISTERED STAFF PHYSICAL THERAPISTS in modern 800-bed general hospital. Wide variety of patients. Forty-hour week, annual two week paid vacation, sick leave, salary dependent upon experience. Approved school of physical therapy connected with the department. Contact Jack C. Hays, Chief Physical Therapist, Physical Medicine Department, Baylor Medical Center of Dallas, 3500 Gaston Ave., Dallas, Texas.

STAFF PHYSICAL THERAPIST for Cerebral Palsy School-Clinic, of Atlanta, Inc. Day School program, clinic and outpatient services for 100 children ranging in age from 18 months to 18 years. Five-day work week, public school holidays, two weeks' summer vacation, sick leave, salary open. Send qualifications and work summary to: Mrs. Harold M. Seymour, Administrator, the Cerebral Palsy School-Clinic of Atlanta, 1815 Ponce de Leon Avenue, N.E., Atlanta 7, Georgia.

REGISTERED PHYSICAL THERAPIST (Female). For modern industrial hospital, working under direction of orthopedist. Attractive starting salary, periodic increases. Excellent Company benefits; 5-day week. Uniforms furnished. Write Dr. J. T. McCahan, Medical Director, Western Electric Co., Hawthorne Station, Chicago 23, Illinois.

PHYSICAL THERAPIST: Experienced. Wanted for active, well equipped department in a 154-bed hospital with expansion program under way. Pleasant surroundings in north suburb of Chicago. Modern housing. Recreational facilities and cultural activities available. Good salary, 40-hour week, varied cases treated. Contact Personnel Director, Highland Park Hospital, Highland Park, Illinois.

WANTED: Registered Physical Therapist, personable, industrious and eager, for group of ten doctors in growing Northwest city. Physical Therapy Department includes two therapists and two aids. Western Clinic, 1119 A Street, Tacoma, Washington.

GRADUATES OF APPROVED SCHOOLS FOR PHYSICAL THERAPISTS, *new legislation provides that* under certain conditions, *you may now practice in California pending your registration in this State.* Positions open in State Hospitals, the Veterans Home and special schools for handicapped children. Starting salaries $436.00 and up; liberal employee benefits; promotional opportunities. Streamlined examinations twice a month in San Francisco and Los Angeles, and on request in other states near candidates residence. Write State Personnel Board, 801 Capitol Avenue, P. T. 71, Sacramento, California.

Positions Available

WORK IN SOUTHERN CALIFORNIA: Physical Therapists needed to staff new Rehabilitation Service at Rancho Los Amigos Hospital. All aspects of rehabilitation of all age levels including post-acute and convalescent care of respirator patients, general medical, and orthopedic disabilities and all aspects of bracing and prosthetics. In-service training program under direction of physical therapy instructor. Five-day, 40-hour week, holidays, sick leave, vacation privileges, retirement benefits with Civil Service rights. New building and most modern equipment available. Quarters available, laundry furnished. Good beginning salary, annual increases. Write; Personnel Director, Rancho Los Amigos Hospital, Hondo, California.

Opening for Staff Physical Therapist in outpatient Rehabilitation Center directed by physiatrist. Wide variety of treatment program. Coordinated physical, occupational, speech-hearing, psychological, vocational, and social services. Excellent personnel policies; up to 3 weeks' vacation. Contact R. A. Silvanik, Administrator, The Rehabilitation Center of Summit County, Inc., 326 Locust Street, Akron 2, Ohio.

PHYSICAL THERAPIST: Staff position. Opportunity for experience in 450-bed general hospital. Salary range $325.00-$350.00 per month. Paid vacation, 6 paid holidays, Blue Cross-Blue Shield group benefits. Immediate opening. Apply Mr. James Dryden, St. Elizabeth Hospital, 49 Hopeland St., Dayton 8, Ohio.

Municipal Hospital of 650 beds needs a Registered Physical Therapist for newly redecorated department doing a wide variety of cases. Liberal personnel policies including 40-hour week, 2 week vacation, etc. Salary of $4888 to $5863 within 4 years. Write to R. E. White, Personnel Office, Hurley Hospital, Flint 2, Michigan.

PHYSICAL THERAPIST—Male or female. Licensed or eligible for licensing for staff position in large Cerebral Palsy Outpatient Clinic with comprehensive services. Salary commensurate with experience; five-day week. Contact Miss Jean Eastman, Medical Coordinator, 380 Washington Avenue, Roosevelt, New York.

PHYSICAL THERAPIST wanted for a 400-bed, general medical and surgical hospital with excellent physical therapy facilities. The salary is open with merit increases after six months service. Liberal employee benefits include sick pay, paid vacation and six holidays. Contact Mr. Gordon Stermer, Physical Therapy Department, St. Joseph Hospital, Flint, Michigan.

Physical Therapist I

$5046 to $5406—40 hours. Large County General Hsopital 17 miles west of Detroit. Liberal retirement, 12 sick days, 12 paid holidays per year, life insurance and hospitalization. Must have completed an approved course in Physical Therapy. Contact: Dr. Olejniczak, Wayne County General Hospital and Infirmary, Eloise, Michigan, LO 1-1700, Ext. 327.

WANTED: Qualified Physical Therapist, male or female, for Physical Medicine and Rehabilitation department in a 600-bed general hospital 40-hour week; three weeks paid vacation; sick leave benefits and retirement program. Write: Herman J. Bearzy, M.D., Miami Valley Hospital, Dayton 9, Ohio.

QUALIFIED PHYSICAL THERAPIST for staff position in a 410-bed hospital. Completely remodeled and well equipped department, wide variety of cases divided equally between hospital and outpatient. Forty hour week, paid vacation, sick leave and holidays; salary open, depending upon qualifications and experience. Excellent opportunity in a growing community located in the Valley of the Sun, winter capitol of the Southwest. Apply Personnel Director, Good Samaritan Hospital, Phoenix, Arizona.

STAFF PHYSICAL THERAPISTS for progressive rehabilitation program in expanding Chronic Disease Hospitals in Baltimore and Hagerstown, Maryland. Starting salary $4,040.00 with annual increments, vacation and sick leave. New and well equipped clinics. Montebello used as teaching hospital for medical students, nurses and physical therapists. Inexpensive living quarters available. Apply Dr. Florence Mahoney, Director, Rehabilitation Medicine, or Miss Dorthea Barthel, Supervising Physical Therapist, Montebello Hospital, 2201 Argonne Drive, Baltimore 18, Maryland.

PHYSICAL THERAPIST: Immediate placement in staff position. Large, university affiliated general hospital offering interesting variety of experience in treatment of inpatients and outpatients; 40 hour, 5-day week. Attractive beginning salary. Liberal personnel benefits. Apply to: Personnel Officer, Cincinnati General Hospital, 3231 Burnet Avenue, Cincinnati 29, Ohio.

Reg. Phy. Therapist to organize and operate Dept. in Hospital. Excellent opportunity for young person to work and take college courses. Hosp. located on Campus of 1500 student Co-ed College. Apply Administrator, Berea College Hospital, Berea, Kentucky.

Opening for qualified staff physical therapist in fully approved 60-bed orthopedic hospital, predominantly crippled children. Vacation with pay, sick leave, insurance benefits. Starting salary $4800, maximum $6300. Apply Administrator, Marmet Hospital, Marmet, West Virginia.

A PHYSICAL THERAPIST position is available immediately for a special demonstration project, providing restorative services for patients with chronic diseases, in a private nursing home. The physical therapist must be a member or eligible for membership in the A.P.T.A. The salary is $439 with a one-step increment to $464 in six months. There is a yearly increment with a maximum of $549. The nursing home is located in Belmont, California, which is approximately 25 miles from San Francisco. If interested please apply to: George Barnes, Supervisor III, Special Services Section, San Mateo County Department of Public Health and Welfare, 222 39th Avenue, San Mateo, California.

Positions Available

BEAUTIFUL NEW YOUNKER MEMORIAL REHABILITATION CENTER, recent 120-bed addition to Iowa Methodist Hospital, has openings for staff therapists. Both in- and outpatient work. Competent supervision, professional staff and assistants. 40 hour week, good pay and benefits. Opportunity for promotion. Excellent working relationships. Des Moines is city of over 200,000 population with outstanding recreational and cultural events. For complete information contact Personnel Director, Iowa Methodist Hospital, Des Moines, Iowa.

WANTED: Physical therapist for well equipped, on-campus department in University Health Center. Varied in- and outpatient services, 44-hour week, 4 weeks' paid vacation, paid holidays, sick leave, retirement and medical benefits. Write: W. J. Hochberg, R.P.T., University Health Center, Penn State University, University Park, Penna.

EXPERIENCED registered physical therapist wanted for clinic in Eastern city. Salary open. Must be experienced in massage. Address replies to Box 81, care of the Physical Therapy Review, 1790 Broadway, New York 19, New York.

PHYSICAL THERAPIST to take charge in small but expanding physical therapy department. Supervision of outstanding physiatrist. Salary at least $5,500.00. Liberal personnel policies. Apply Morristown Rehabilitation Center, 66 Morris Street, Morristown, New Jersey.

HENRY FORD HOSPITAL, Detroit, Michigan has an opening for a staff therapist; 5-day wk., all holidays, group insurance, and retirement benefits. Daily in-service staff training program. Complete cross-section of medical and surgical disabilities treated. Department under direction of a physiatrist. Write Dr. Wm. C. Schaefer, Division of Physical Medicine and Rehabilitation.

A CHIEF R.P.T. AND A STAFF R.P.T. (both female) for full time work in offices of five orthopedic surgeons. Well established department, 40-hour week, good salaries, terms and working conditions. E. G. Derrick, Mgr., The Orthopedic Clinic, 2620 No. 3rd St., Phoenix, Arizona.

PHYSICAL THERAPY CONSULTANT—Help develop a new state geriatrics consultation service to local health authorities and nursing home administrators. Assist in training institutes. Demonstrate physical therapy techniques. Need BS in Physical Therapy and four years experience including two in specialized work with elderly, handicapped people. Start at $562. Wisconsin State Board of Health, State Office Building, Madison.

WANTED IMMEDIATELY: Two (2) Staff Physical Therapists, expanding department of an orthopaedic clinic. Department under direction of a Physiatrist. Vacation, sick leave, holidays. Inquire: Arthur E. White, M.D., Anderson Clinic, South 25th Street & Army-Navy Drive, Arlington, Virginia.

EXPANSION PROGRAM necessitates increasing present physical therapy staff of 8. Three full time physiatrists provide medical supervision. Excellent starting salary and fringe benefits commensurate with experience. Educational opportunities, both clinical and didactic, are excellent. Good opportunities for advancement. Overtime paid in excess of 5-day 40-hour work week. Write Director of Medical Services, Institute of Physical Medicine and Rehabilitation, 619 Glen Oak Avenue, Peoria, Illinois.

IMMEDIATE OPENING for female staff physical therapist for children's hospital; 40-hour week, sick leave, 3 wks. vacation, salary commensurate with experience. Write Miss Nellie Koster, R.N., Director, Mary Free Bed Guild Children's Hospital and Orthopedic Center, 920 Cherry St., Grand Rapids 6, Michigan.

WANTED: Physical therapist, 610-bed general hospital. For information, contact Mr. Wayne E. Kirker, Chief Physical Therapist, Harrisburg Polyclinic Hospital, Harrisburg, Pa.

STAFF PHYSICAL THERAPIST needed September for private program offering preschool and therapy services to cerebral palsy children.. Participation in research program required. Salary to $380.00 depending on experience. Month's vacation with 35-hour week. New, modern, well equipped facility. Apply to Administrative Director, Spastic Children's Clinic and Preschool, 1850 Boyer Ave., Seattle 2, Wash.

(continued on next page)

Classified WANT-ADS

New Rates

$3.00 for the first line
1.00 each additional line

Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Closing date for copy and cancellation is two months preceding publication date.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to .....care of
The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.

Positions Available

WANTED: MALE PHYSICAL THERAPIST to establish and take charge of a physical therapy department in a 200-bed general hospital. Would like to know amount of experience, salary expected, number of work hours per week. Write E. J. Lauretti, M.D., Mercy Hospital, Muskegon, Michigan.

PHYSICAL THERAPIST: In Hospital-School for rehabilitation of children with orthopedic handicaps. Complete interesting program. Good salary, merit increases. Annual paid vacation, sick leave, excellent retirement plan. Write to Director of Physical Therapy, Illinois Children's Hospital-School, 2551 N. Clark Street, Chicago 14, Illinois.

TWO STAFF THERAPISTS needed for general hospital. Excellent education and teaching facilities. Good salary. Write for further details to: Dr. Hilda B. Case, Director of Physical Medicine and Rehabilitation, University Hospitals of Cleveland, 2065 Adelbert Road, Cleveland 6, Ohio.

PHYSICAL THERAPIST for expanding department in a new 50-bed rehabilitation hospital. Newly equipped department treating polio, orthopedic and cerebral palsy children. Forty-hr week; three weeks' vacation; Blue Cross available. Write: Administrator, Crippled Children's Hospital, 200 Henry Clay Avenue, New Orleans, La.

WANTED IMMEDIATELY: Registered physical therapist, female; take charge of well equipped department in new 250-bed hospital, Atlanta. Salary commensurate with ability. Write: Dr. C. J. McLaughlin, 1010 Medical Arts Bldg., Atlanta 8, Ga.

IMMEDIATE OPENING for registered Physical Therapist to operate modern, nearly new department in 81-bed general hospital. Department head position with opportunity to build strong department. Apply Administrator, Lebanon Community Hospital, Lebanon, Oregon.

STAFF PHYSICAL THERAPIST: for outpatient rehabilitation center treating both children and adults. Experience preferred but not essential. Starting salary, without experience, $4200. Forty-hour, five-day week. Excellent personnel policies. Contact: Benedict R. Kraus, Chief P.T., Community Rehabilitation Clinic, 614 Dartmouth S.W., Canton, Ohio.

STAFF THERAPIST AND ASSISTANT CHIEF. General medical and surgical cases, in- and outpatient service. Opportunity for varied experience. Vacation, sick leave and social security benefits. Apply: Mr. Norman Schreck, Coordinator of Rehabilitation Services and Chief Physical Therapist. Physical Therapy Department, The Johns Hopkins Hospital, Baltimore 5, Maryland.

IMMEDIATE OPENING: Female registered physical therapist in orthopaedic offices. Apply Business Manager, for Doctors Ross, Stephens, Brown & Bleecker, 228 West College, Covina, California.

QUALIFIED PHYSICAL THERAPIST (two) for outpatient cerebral palsy treatment center. Starting salary $4550 per year. Two months vacation, liberal sick leave benefits. Liberal personnel policy. Contact Robert Schlitt, Director, Peninsula Cerebral Palsy Training Center, 901-24th Street, Newport News, Virginia.

QUALIFIED PHYSICAL THERAPIST for immediate placement in well equipped department of 320-bed hospital. Excellent salary and personnel policies. Write Assistant Administrator, St. Mary's Hospital, Grand Rapids, Michigan.

WANTED: Qualified Physical Therapists, 500-bed, modern, general chronic disease hospital. Salary dependent on experience; liberal vacations and sick leave benefits, lunch provided. Apply Executive Director, St. Barnabas Hospital, New York 57, New York.

CEREBRAL PALSY THERAPIST in county health department. Progressive program in expanding Bay Area. Requires California cert. plus 1 year exper. in phys. ther.; $415-$505 a month. Contact I. Schnayer, Alameda County Civil Service, 188 12th Street, Oakland 7, Calif.

WANTED: Physical therapist for staff position in outpatient rehabilitation clinic. Liberal benefits, air conditioned clinic, modern equipment and under direction of a physiatrist. Recent graduate acceptable. Write to Ward A. Merrell, Administrator, Rehabilitation Services, Inc., 204 Court Street, Binghamton, New York.

IMMEDIATE OPENING: Qualified Staff Therapist for outpatient comprehensive rehabilitation unit in University setting. Multiple disabilities and all age groups accepted. Minimal salary $4800.00 depending upon experience. Female therapist preferred. Apply Executive-Director, Medical Center Rehabilitation Unit, Box 86 University Station, Grand Forks, North Dakota.

PHYSICAL THERAPIST. Two physical therapist positions at the Bureau of Crippled Children, Department of Health, and one position for a female at the hospital for the mentally ill. Requires graduation from a school of physical therapy approved by the Council on Medical and Hospitals of the American Medical Association. Appointments may be made at any salary interval between $384 and $513 at which qualified persons can be recruited. Continuous recruitment until needs are met. Write for additional information and application to: Mrs. Loretta Fukuda, Recruiting & Examining Supervisor, Department of Civil Service, Territory of Hawaii, 825 Miliani Street, Honolulu 13, Hawaii.

SINGLE, MALE physical therapist to operate statewide mobile unit for arthritics. Salary $500 monthly plus liberal traveling expenses and vacation.

MALE physical therapist to operate arthritis mobile unit for Greater Miami area. Salary $500 monthly with liberal vacation, and many other benefits. Write to Ralph E. Nollner, Executive Director, Florida Chapter, Arthritis and Rheumatism Foundation, 1206 Huntington Medical Building, Miami 32, Florida. Minimum of three years experience required for both positions.

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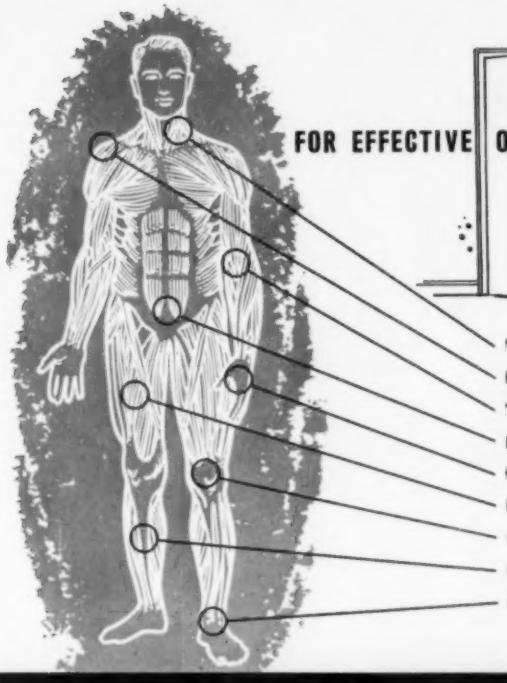

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- Deep-tissue heating — up to 106° F. 2" deep in muscle tissue
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AMBUL–AID®

A stable, dependable walker for the many difficult cases where conventional walkers fail to provide proper support. Its exclusive patented design makes Ambul-Aid

THE *ONE* WALKER FOR *ALL* YOUR PATIENTS

STABILITY, POSITIVE SUPPORT, SAFETY & VERSATILITY are the main features of AMBUL-AID—features you've always wanted in a walker. It overcomes many of the limitations of other walking aids—and brings you a single, dependable all-purpose walker for the severely disabled which is equally useful for your less involved patients.

GREATER STABILITY

Ambul-Aid has a broader base than any other walker—wide enough so a wheelchair can go inside. Attractive and solid appearance builds patient confidence. Patients are not afraid to walk, even the first time.

POSITIVE SUPPORT

Unique Axillary Crutch Attachments—not found in any other walker—provide three exclusive advantages: (1) Finger-Tip-Control Lever locking device allows easy adjustment to *any* angle, *any* height in a matter of seconds. (2) The Crutch attachments are firmly locked in any desired position and give positive support. (3) Underarm supports are much larger than the "T" shaped pieces found in standard walkers; they are shaped to assist in correct body alignment and to prevent patient's falling forward. A hip strap placed in back of patient is designed to prevent falling backwards.

SAFETY

The four large ball-bearing casters have step-on brakes, which provide important advantages. By applying the brakes on two casters, the movement of the walker is slowed down. By applying all four brakes the walker can be positively locked in place—an important safety feature in many cases, such as if the therapist should have to leave a patient unattended.

VERSATILITY

PARALLEL LOCKS for Casters, another unique feature, prevent lateral motion. On Ambul-Aid each swivel caster has a parallel lock, which can be set to prevent the caster swiveling. Locking either the two front or two rear wheels gives the patient better control of the direction of the walker.

TELESCOPIC LEGS allow height adjustment to accommodate patients from 4'6" to 6'6" in height. Child-size Ambul-Aids are also available for children from about 3'3" to 5'0" tall.

The height adjustment may also be used to give a lateral tilt, simply by lengthening the two legs on one side. In using the walker with hemiplegics, this elevation assists the patient in bringing the affected leg through the sagittal plane, rather than using the "circumduction" gait.

ABDUCTOR STRAP. Consists of a cuff, elastic cord and a ring with nylon rollers. Prevents the "scissor gait" and forces the patient to place weight on the extremity.

ORDER BY CATALOG NUMBERS:

PC 2340—Ambul-Aid—Adult Size—Overall dimensions 29" wide by 42" long, for patients from 4'6" to 6'6" tall. Complete with handle grips, crutch pads, hip strap, ankle straps, abductor rod attachments ***$189.50***

PC 2340C—Ambul-Aid—Child Size—For children from 3'3" to 5'0" tall. Complete ***$183.50***

PC 2341—Ambul-Aid—Adult Size—Same as 2340 less ankle straps and abductor rods ***$179.50***

PC 2341C—Ambul-Aid—Child Size—Same as 2340C less ankle straps and abductor rods ***$173.50***

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